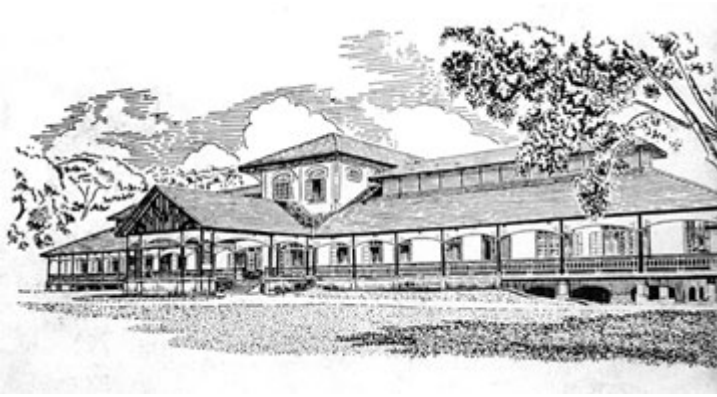


# History

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# Founding and Development of the Institute



The Institute for Medical Research (IMR) began with a recommendation in 1900 from Sir Frank Athelstane Swettenham, the Resident-General of the Federated Malay States, to establish a Pathological Institute in Malaya to "carry out scientific and sustained research into the causes, treatment and prevention of such scourges as beri-beri and all forms of malaria fevers". This proposal was made following the resolution of the

Conference of Berlin held in Europe in 1885 to undertake such activities so as "to promote the moral and material well-being of the native population and to explore the great and unknown field of tropical medicine".

The European colonial powers at that time namely the French, Dutch and English, moved almost simultaneously to establish new research institutions in the Colonies. The Pathological Institute in British Malaya was one such institution. It was to serve as a research outpost for the London School of Tropical Medicine, established a year earlier in 1899 at about the same time as that of the Liverpool School of Tropical Medicine.

Kuala Lumpur was chosen as the site for the new Institute because of its central position in the Malay Peninsula. The time was opportune as the country was beset by not only tropical diseases such as **beri-beri** and **malaria**, but also by **dysentery**, **small pox**, **cholera**, **plague**, **rabies** and other endemic, sporadic, infectious and contagious diseases.

Sir Patrick Manson, who was the Medical Advisor through the British Colonial Office at that time, appointed Dr. Hamilton Wright, a pathologist at the London School of Tropical Medicine, to serve as the Institute's First Director. Much of Wright's time during the first year was taken up with the planning of the new Institute. When the buildings were completed, a formal opening ceremony was held in February 1901 and in August of the same year, the Pathological Institute became known as the Institute for Medical Research.

## 1901 – 1905 (The Early Years)

Early research was carried out on:

- malarial fevers of Malaya – the study of taxonomy and vector biology (Leicester & Daniels) and on malarial control (Watson);
- beri-beri - its aetiology and pathology (Braddon, Fraser & Stanton); and the study of dysentery.
- Reports were written on cholera in Rawang; plague in Kuala Kubu Bharu; and rabies in Negeri

Sembilan.

## 1906 –1914 (Before the First World War)

- From an independent Federal Department, the Institute became a branch of the Medical Department. Routine pathological work for the medical services was offered covering chemical, toxicological, pathological, bacteriological and medico-legal services.
- The Institute's contribution towards the solution of the beri-beri problem, and the work done by Fraser and Stanton, are documented in the book 'The Cause and Prevention of Beri-beri' by Braddon.
- The classification of Malayan mosquitoes was carried out by Leicester and Daniels, while Watson published a book on Malarial Control.

## 1914-1927 (The First World War and Thereafter)

- In-depth studies are conducted into the causes, transmission, treatment and prevention of such diseases as cholera, small pox, leprosy, melioidosis, influenza, dysentery, rabies, tuberculosis, typhoid, filariasis, leptospirosis, dengue and scrub typhus.
- Research into other aspects of malaria and beri-beri continued.
- In 1918, the IMR contributed to the discovery of the cause of beri-beri, i.e., the disease was caused by the deficiency of an essential nutrient that resulted from the consumption of rice which had been excessively milled.
- In 1924, a new series of Institute publications, the Bulletin series, was started, in which were included shorter articles and progress reports of investigations; on completion of the research, these articles and reports would form a basis of monograph or study.

## 1928 – 1929 (Reorganisation)

- The Institute expanded to accommodate a South Block for the Administration, the Divisions of Pathology, Bacteriology and a Library. The North Block was taken up by the new Divisions of Entomology and Malaria Research. The Chemistry Division ceased to exist to give way to the creation of the Division of Biochemistry and the Division of Nutrition. The Ipoh branch laboratory of the Institute came into being.

## 1929 – 1941 (Between the Wars)

- With the expansion and the reorganisation of the Institute, there were two appointments for research students. It was a phase of active inquiry in many fields (filariasis, tuberculosis, typhoid fever, beri-beri), while the focus remained in malaria research.

- The League of Nations Malaria courses (1935-1939), an international malaria course, was organised in Singapore by the Health Organisation of the League of Nations. The Institute contributed by pooling the experience.
- The courses were partly diverted later to the Institute where certain aspects of malariology could be studied to a better advantage. This opportunity for an international gathering of malaria workers was lost with the war.
- The Fifth International Congress in Malariology opened in Kuala Lumpur in 1939 with delegates from most of the countries of the Far-East.

## 1941 – 1945 (War in Malaya)

- The IMR Ipoh branch laboratory was transferred to Kuala Lumpur and there was the final evacuation of the IMR to Singapore with the recruitment of local and European IMR staff in the Defence Services (the details are illustrated in the original text of Field's '50 Years of Medical Research in Malaya').
- The period of Japanese Occupation in Malaya from 1942-1945 witnessed the breakdown of the high standards of disease control and a malaria epidemic broke out in Kuala Lumpur. The IMR was involved mainly in the production of cholera and typhoid vaccines as well as the provision of some diagnostic services.

## 1945 – 1950s (Post-War Years)

- The IMR addressed the problems of widespread malnutrition; smallpox in Kedah; rabies in Province Wellesley, Kedah and Kelantan; and sporadic cholera throughout the country.
- Research into population nutrition, prophylactic trials with paludrine and other antimalarial drugs, penicillin sensitivity testing and insecticide trials with DDT and BHC in malaria control, were also undertaken.
- The British Scrub Typhus Research Team and the United States Army Medical Research Unit (USAMRU) researched into the problem of scrub typhus, a disease which was first described by Fletcher in 1926.

## 1948 – 1960 (The Emergency Years)

- In 1948, the Field Stain for the identification of malaria parasites was developed by Dr Field, a director of IMR.
- Also in 1948, a team of researchers from the USAMRU successfully demonstrated that the antibiotic chloramphenicol could be used to treat scrub typhus.
- With the Emergency and the threat of communism, the local defence forces worked together with the

troops from the colonies and other Commonwealth countries. Leptospirosis was studied in depth because it was thought to pose a considerable health hazard to the security forces which operated in the jungles of Malaya.

- With the East African troops operating in the jungles of Pahang, the introduction of schistosomiasis was a great possibility. Likewise with Fijian troops operating in the Johore jungles, the introduction of the non-periodic Bancroftian filariasis needed study.
- The Central Block was added to the Institute's North and South Blocks in 1953. This building housed the British Colonial Medical Research Team, the USAMRU, the Division of Medical Zoology and Virus Research, the new Library and a Lecture Theatre. A year earlier, the Penang laboratory became a branch laboratory of the IMR along the same lines as those of the Ipoh IMR branch laboratory.
- During this period, three International Scientific Meetings were held at the IMR, that is, the Conference on Yellow Fever and other Viral Diseases (1954); a symposium on Leptospirosis (June 1955); and the World Health Organisation (WHO) organised a study group of Filariasis (December 1955).

## 1957 – 1965 (Independence and Post-Independence)

- In 1960, the Ministry of Health requested assistance from international organisations such as the WHO and the Colombo Plan; at the same time, the US Public Health and the Hooper Foundation were permitted to undertake medical research at the IMR. The period marked the discovery of 120 new species of chiggers by the Medical Zoology Division; rare blood types in Southeast Asia by the Haematology Division; and the existence of haemorrhagic fever in Malaya by the Virus Division.

## 1966 – 1969

- A School of Medical Laboratory Technology was established to conduct a three-year course for Medical Laboratory Technologists and a one-year course for Junior Laboratory Assistants.
- New Divisions of Oral Pathology, Cytology, and Helminthology and Protozoology were established. The Division of Filariasis and Malaria Research split to become independent divisions. Likewise, the Division of Medical Zoology, which earlier on had been independent of Virology – also split into the Division of Vertebrate Zoology and the Division of Acarology.
- Research in the IMR carried out independently or in collaboration with the Hooper Foundation and the USAMRU resulted in some 90-100 publications annually.
- In 1967, the IMR was declared Malaysia's National Centre for Tropical Medicine under the Southeast Asian Ministers of Education Organisation (SEAMEO). A six-month training course leading to the Diploma in Applied Parasitology and Entomology (DAP&E) was offered to graduates in science and

medicine from the SEAMEO countries.

## 1971 – 1975 (Second Malaysia Plan)

- The IMR was further developed in two phases. The first phase involved the construction of a hostel for 240 students, the School of Medical Laboratory Technology, 2 lecture theatres, stores, a maintenance workshop, a cafeteria and adequate facilities for Laboratory Animal Resources. The second phase involved the construction of the Administrative block, research and service laboratories and an Insectarium.
- The main activities continued to be research, training, vaccine production and referral diagnostic laboratory services.

## 1975 – 1979

- The main thrusts of research were directed at investigating rural health problems; dengue, scrub typhus, leptospirosis and other viral diseases; the vector biology of insect-borne diseases; the ecology of zoonotic diseases in small animals; parasitic, bacterial and fungal infections including food and hygiene bacteriology; community nutritional status, nutritional biochemistry and nutritional disorders; cancers; abnormal haemoglobinopathies, G6PD deficiency diseases and genetic disorders; cell mediated immunity, population immunity status and sexually transmitted diseases (STD); hormone disorders, clinical enzymology and toxicology; and behavioural science with particular reference to the study of the social, cultural and behavioral factors affecting health.

## 1980 – 1984

- Disease-orientated research approach continued to be the main strategy adopted by the IMR in its research endeavors.
- Malaria, filariasis, dengue, scrub typhus, other parasitic diseases, leprosy, enteric diseases, respiratory infections, febrile illnesses, sexually transmitted diseases, cancer, human nutrition, community health research, and reproductive endocrinology were the main areas of research. Additional biomedical research and research aimed at updating methodologies were also undertaken.
- In 1981, a team at IMR succeeded in culturing in vitro, the human filarial parasite *Brugia malayi* from the infective larval (L3) stage to the fifth (L5) stage.
- Between 1981-1983, a new species of schistosome, called the Malaysian schistosome, was described. This schistosome was found in the riverine areas of Kuala Koyan in Pahang.
- In 1983, the IMR established the use of the common local species of *Presbytis* monkey as a model for anti-filarial drug trials.

- The opening of the IMR Snake Farm in Perlis on 3rd March 1981 marked another milestone in the growth of the Institute. In response to the high incidence of snake bites in the northern states of the country, the Snake Farm was expected to study the epidemiology, biology and ecology of snakes and produce antivenom against the Malaysian pit viper, the Malaysian cobra and sea snakes. A rapid diagnostic kit for snake bites was developed in collaboration with the Kangar General Hospital.
- In 1982, the IMR Clinical Research Centre was established which began research into blood disorders, STD and myelomas on an outpatient basis.
- On 4 th June 1983, the Biomedical Museum was officially opened for the purpose of providing information to the scientific community on research activities and contributions of the IMR; the museum also has a valuable research reference collection dating back to 1900.
- From 1st April 1984, the IMR has provided HLA-tissue typing and HLA cross-matching services for renal transplant patients; it has the first and only HLA-Tissue Typing Laboratory in Malaysia.
- The enzyme linked immunosorbent assay (ELISA) and the indirect fluorescent antibody (IFA) test for malaria were developed as seroepidemiological tools.

## 1985 – 1987

- Since 1984, a Dengue Surveillance and Cohort Study was initiated as a 5-year joined study with the University of Malaya and the Kuala Lumpur General Hospital.
- With the emergence of the Acquired Immune Deficiency Syndrome (AIDS), the Ministry of Health (MOH) formed an AIDS Task Force and the IMR virus laboratory was designated as the National Reference Laboratory for AIDS Diagnosis, which would screen sera from donors and high risk groups and help in the laboratory diagnosis of AIDS.
- The Division of Virology was involved with the MOH Pilot Study on Rubella Immunisation from May to September 1985.
- A WHO Collaborative Centre for Ecology, Taxonomy and Control of Vectors of Malaria, Filariasis and Dengue was established at the IMR in 1986.
- A new division of Health Behavioral Reseach was set up at the IMR in January 1987.
- The Organisation of the Islamic Countries (OIC) designated the IMR as the Inter-Islamic Network for Tropical Medicine (INTRROM) in 1987.
- With the completion of the cobra antivenom project, the Snake Farm was fully functioning.

## 1988 – 1990

- In 1989, a local strain of *Bacillus thuringiensis* was discovered. This strain has been shown to be more potent than the internationally accepted strain *Bacillus thuringiensis israelensis*.

- The change in direction from disease-oriented research to problem-solving research was in line with the implementation of the MOH health programmes. Thus, new research areas were included with emphasis on behavioral and health systems research, non-communicable diseases and community health.
- On 4th July 1989, the USAMRU officially closed its operation in Malaysia after 40 years of collaborative research into tropical diseases with the IMR.
- Two organisational changes took place in 1990, and these include the closure of the Vaccine Production Unit and the discontinuation of the production of antivenom by the Snake Farm.
- The Allergy Programme was initiated in 1990 with the increase in awareness of morbidity and mortality due to allergies.

### 1991 – 1993

- Research projects were grouped into 15 research programmes: Allergy, Behavioural, Blood Disorders, Cancer, Cardiovascular Diseases, Community Health, Dengue, Febrile Illnesses, Filariasis, Human Nutrition, Leprosy, Malaria, Other Parasitic Diseases, Scrub Typhus and STDs.

### 1994 – 2000

- The IMR was organised into 5 departments, namely, Tropical Medicine, Clinical Pathology, Community Medicine, Support Services and Administration. The Department of Tropical Medicine comprised the following Divisions: Acarology, Bacteriology, Medical Entomology, Parasitology and Virology. The Department of Clinical Pathology comprised the following Divisions: Biochemistry, Endocrinology, Haematology, Immunology, Molecular Pathology and Stomatology. The Department of Community Medicine comprised the following Divisions: Epidemiology and Human Nutrition. The Department of Support Services comprised the following Divisions: Biotechnology Centre, the Computer Unit, Laboratory Animal Resources, the Library, Information and Publication, Environmental Health Research Centre/Medical Museum, Electron Microscopy Unit, Medical Photography Unit. Administration consisted of: the Finance Unit, the Purchase and Supply Unit, and the Service and Administration Unit.
- The IMR celebrated her 100 years of existence in the year 2000. Year-long activities comprising both scientific and social programs were organized and well attended to commemorate this auspicious occasion. The main event of these celebrations was the "IMR Open Day" which was officiated by Yang Amat Berhormat Dato' Seri Abdullah Haji Ahmad Badawi, Deputy Prime Minister of Malaysia on 24 August 2000. A commemorative plaque was unveiled and a set of 3 commemorative stamps and a first-day cover were launched.



- Three products were commercialized namely MOSBAC, an aqueous suspension formulation containing the spore crystal complex of *Bacillus thuringiensis*, IMR-BT-1 for the biological control of mosquito larvae and R-EST, a test kit for the rapid detection of insecticide resistance.
- Nutri-Cal, a nutrient analysis and food composition data management software was developed.

## 2001 – (The Present)

- In 2001, the IMR was restructured whereby the former 22 divisions were re-configured to form six Research Centres and two support Centres. Within each of these Centres, scientists from the various disciplines collaborate to work together, and with researchers outside the IMR on priority research projects. With this approach, research has become more focused with consolidation of resources; thus building on the strengths of the IMR. The greater focus allows the Institute to venture into new growth areas and bring research closer to the cutting edge of science and technology.
- The new structure of the IMR is as illustrated in the organisational structure.
- The IMR officially came under the ambit of the National Institutes of Health Malaysia in 2003.
- The research focus of IMR extends beyond tropical diseases and penetrates into other areas of biomedical discipline such as cancer, herbal medicine, immunology and autoimmune diseases, diabetes and metabolic syndrome, stem cell research and environmental health, in line with the changing trend of health burden in the country and advancement of medical technologies.
- A total of 22 products or methods were patented or pending patent, five of these were commercialized.
- The IMR developed 'Globinmed' [www.globinmed.com](http://www.globinmed.com) which is a global information hub on integrated medicine. The main function of this website is to provide information on all aspects of traditional medicine e.g. safety, research, training, policy and trade for the layperson as well as for practitioners.
- IMR continues to support the pathology service of the country through continuous improvement of the test methods or development of new methods through research & development. IMR became the only centre in the country that offers biochemical genetic testing for Inborn Error of Metabolism (IEM), molecular diagnostics for genetic diseases and detection of trace elements and heavy metals in biological fluids.
- The IMR laboratories serve as the National Reference Centres for Transplantation, Allergy Diagnosis, Primary Immunodeficiencies, molecular diagnosis of leukaemias, multiple myelomas and confirmatory diagnosis of infectious diseases.
- The IMR established the Malaysian Marrow Donor Registry with MAKNA, for the purpose of tissue typing potential donors for patients who are in need of a bone marrow transplant.
- IMR is elected as a Member of the Governing Board of the WHO-UNDP-World Bank Special

Programme on Tropical Disease Research (WHO-TDR), which is the highest policy decision body on tropical disease research of the WHO.

- The WHO appointed IMR as one of the coordinating body for WPRIM (Western Pacific Region Index Medicus).
- Between 2000–2004, IMR, through a research programme supported by the SEAMEO-TROPMED Regional Centre and WHO, established the vector of malaria in Laos.
- IMR is the Chair of the Public Health Sector of the Second National Communication on Climate Change, and a Member of the Technical Working Group on Climate Change, Ozone Depletion and Eco-system Change of the Regional Ministerial Forum on Environment and Health.