

SEAMEO TROPMED THAILAND: FACULTY OF TROPICAL MEDICINE, MAHIDOL UNIVERSITY

BACKGROUND OF THE CENTER

The Faculty of Tropical Medicine (FTM) was co-founded by Prof Chamlong Harinasuta and Prof Khunying Tranakchit Harinasuta in 1960 as one of the faculties of the University of Medical Sciences (presently Mahidol University) which emphasizes on new knowledge for teaching, curing, and preventing on tropical diseases together with building worldwide networks in international public health cooperation. In 1967, the Royal Thai Government designated the Faculty as SEAMEO TROPMED National Center for Tropical Medicine, to facilitate training and strengthening of medical doctors and health personal from countries worldwide. It offers training on endemic tropical diseases, parasitology, community and preventive medicine. It also conducts researches on alternative control measures of diseases and the promotion of healthy lifestyles, including trials of new chemotherapeutic compounds and new vaccines. It provides clinical care to patients suffering from tropical diseases.

Over the past 50 years, FTM has developed and become recognized as “**the leading institute in the Tropics for the study of tropical medicine**”. Staff of the Faculty has published about 4,000 articles in international and national journals and more than 2,600 students from over 50 countries around the world have graduated from the Faculty.

ROLE IN EDUCATION

Mahidol Bangkok School of Tropical Medicine (Mahidol-BSTM), the educational

arm of the Faculty of Tropical Medicine is the only institution in Thailand that teaches Tropical Medicine courses and programs offering world class regular postgraduate programs, ranging from graduate diploma courses to doctoral level degrees, for medical doctors and scientists and generalists. The school is acknowledged and approved by the International Society of Travel Medicine and the American Society for Tropical Medicine and Hygiene to be one of the eight schools in the world in which the student can get a diploma in tropical medicine.

International Regular Courses are as follows:

For Medical Doctor

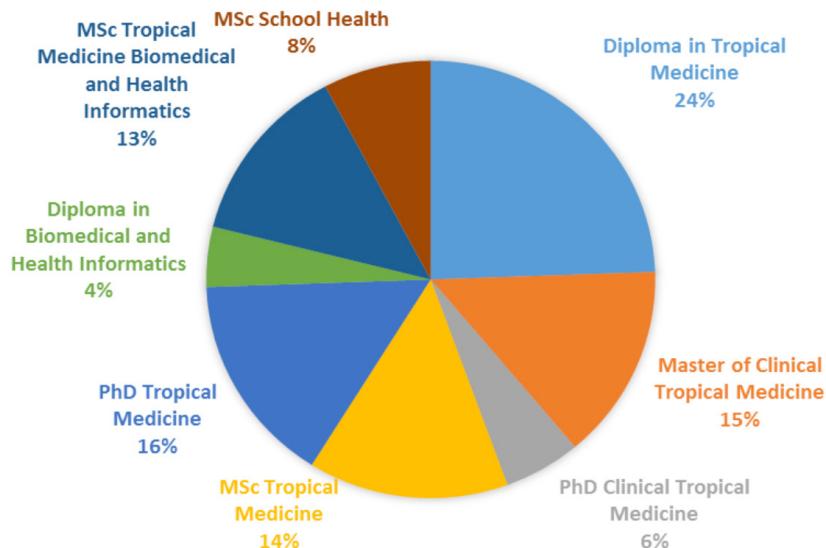
- Graduate Diploma in Tropical Medicine and Hygiene (D.T.M. & H.)
- Master of Clinical Tropical Medicine (M.C.T.M.)
- Master of Clinical Tropical Medicine (Tropical Pediatrics) [M.C.T.P. (Trop. Ped.)]
- Doctor of Philosophy in Clinical Tropical Medicine [Ph.D. (C.T.M.)]

For Scientist

- Graduate Diploma in Biomedical and Health Informatics (D.B.H.I.)
- Master of Science in Biomedical and Health Informatics [M.Sc. (B.H.I.)]
- Master of Science in Tropical Medicine [M.Sc. (Trop. Med.)]
- Doctor of Philosophy in Tropical Medicine [Ph.D. (Trop. Med.)]

For Other Qualifications

- Graduate Diploma in Biomedical and Health Informatics (D.B.H.I.)



- Master of Science in Biomedical and Health Informatics [M.Sc. (B.H.I.)]

- Master of Science (School Health)

The Diploma in Tropical Medicine and Hygiene (D.T.M. & H.) is certified and rewarded from Office of the Higher Education Commission as the best practice international exchange program.

The Faculty of Tropical Medicine together with Preventive Medicine Association of Thailand also organizes the first residency program on Preventive Medicine (Travel Medicine).

The School has continued successfully to attract students, with an increasing number of international students. In 2015, 70% of enrolled students were non-Thai, a significant increase from 2014. This increasing internationalism is a sign of the progress the BSTM is making towards its aim of becoming a Top-Five Tropical Medicine School by 2017. With changes in technology, communications, and how people access information, distance and online courses are becoming

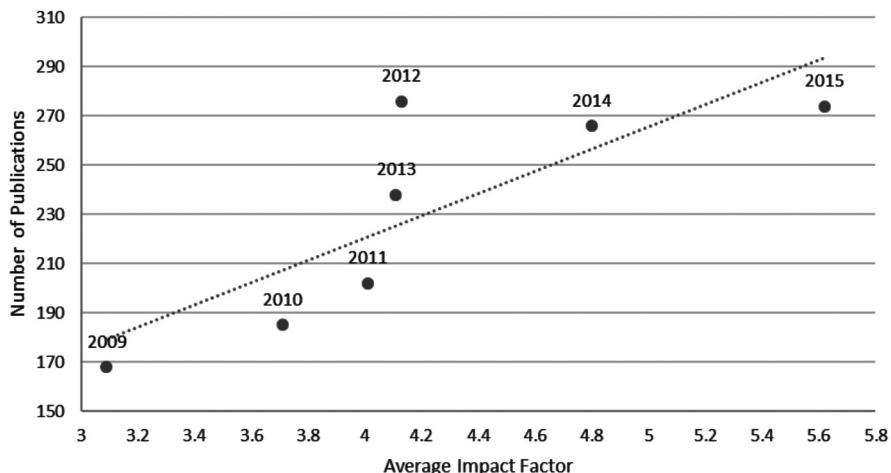
more and more popular. The School has taken note of this trend and in 2015 started planning its own MOOC (Massive Open Online Course) to extend the reach of our academics and bring medical education to those who cannot attend on-campus classes.

Short course training

The Faculty regularly offers international training courses in Tropical Medicine to medical doctors, scientists and health personnel from various countries worldwide.

ROLE IN RESEARCH

The Faculty conducts basic and applied research for Tropical Diseases, ranging from diagnostics, therapeutics, to vaccine development, and vector control to prevent and cure tropical diseases. It has received over 100 million Baht in funding for over 100 domestic and international research projects. Faculty researchers consistently publish over 250 articles per year in international journals. These



Impact factor and number of publications.

publications are widely cited, and affect clinical practice and treatment around the world. The Faculty of Tropical Medicine main research areas are malaria, dengue, melioidosis, HIV / AIDS, leptospirosis, rickettsioses, chikungunya, neglected tropical diseases, soil-transmitted and food borne helminthiases and toxoplasmosis. Publications have steadily increased, both in terms of number and journal impact factor. In 2015, the total number of publications from the Faculty and its collaborative units, was 274, an increase of 3% from 2014. The average journal impact factor greatly increased, from 4.8 in 2014 to 5.62 in 2015.

At the end of 2015, the Faculty had 226 ongoing or recently completed research projects. Outstanding research areas are malaria and dengue. FTM's researchers work closely with regional and global organizations to reach the goal of eliminating malaria from the region by 2020. This level of research and output shows the Faculty's progress towards becoming a top tropical medicine research facility by 2017.

Centers of Excellence

Center of Excellence for Biomedical and Public Health Informatics (BIOPHICS). BIOPHICS provides quality health informatics through teaching and research: the unit provides development, management, and consulting services to public and private organizations. BIOPHICS manages databases for several large clinical trials, as well as the National Electronic Malaria Information System (eMIS) and is a key player in monitoring the spread of various diseases in Thailand.

The Vaccine Trial Center (VTC). The center is a clinical facility that plans and conducts clinical trial to support the development of effective vaccines to prevent emerging and reemerging diseases worldwide. Some of the center's highlights include the successful trial of a nonvalent HPV vaccine (Gardasil) in collaboration with Merck, as well as the work on an AIDS vaccine has been voted by Time magazine as 1/10 medical breakthroughs for the year 2009.

Center of Excellence for Antibody Research (CEAR). The goal of the Center is to pro-

duce several research projects to develop therapeutic and diagnostic products/antibodies against infectious diseases, especially dengue virus infection, and tropical diseases. Exciting results produced by the Center have included the world's first therapeutic human monoclonal antibodies against all 4 serotypes of dengue virus that can neutralize 20 clinical isolates of dengue virus (5 isolates per serotype) (*in vitro*). The US Patent No. 3190-170, Efficient preparation of human monoclonal antibody to neutralize all serotypes of dengue virus using peripheral blood lymphocytes from patients. Followed with a second patent for the study, 'Epitope-based vaccine with dengue virus domain II immunogens derived from the recognition region by dengue patients' peripheral blood lymphocyte-derived human monoclonal antibodies, showing neutralization of all four serotypes of dengue virus' (US Patent Number 3190-181).

Various new therapeutic and diagnostic MAbs that can be used in the diagnosis of tropical diseases are currently being developed by CEAR's experts using classical hybridoma and novel phage-display technologies. Development of an H5N1 Fab human antibody diagnostic kit. A rapid test for use in detecting and differentiating H5N1 influenza virus from other influenza viruses has gone into licensed production. Production of therapeutic antibodies against chikungunya virus (CHIKV) has been working out.

Malaria Research Center. One of only a few centers in the world that support the validation of transmission blocking vaccines, especially for *Plasmodium vivax*. Malaria Research Center laboratory can access to *P. vivax*-infected blood, which can be fed to Anopheles vectors. This laboratory is considered as a reference laboratory for eval-

uation of *P. vivax* transmission-blocking candidate vaccines. Clinical evaluation of this type of vaccine efficacy can be carried out faster than other more traditional ones. Malaria Research Center has collaborated on a wide range of regional and international studies, including: malaria transmission and gametocyte dynamicity in Thailand in comparison with Brazil and Papua New Guinea; *P. vivax* liver stage biology; and malaria transmission in Asia. It also provides undergraduate and graduate training in malaria research, and offer international short courses for researchers from Thailand and abroad.

One of the Center's most high-profile is malaria clinical research which has investigated the spread of artemisinin resistance in Southeast Asia. The Center is committed to find novel therapeutic tools including new antimalarial.

WHO Collaborating Center for Clinical Management of Malaria.

Faculty of Tropical Medicine was designated as WHO Collaborating Center for Clinical Management of Malaria since 1996. It provided research, training, technical consultants to national and international institutes.

ROLE IN COMMUNITY AND SOCIAL RESPONSIBILITY

1. The Bangkok Hospital for Tropical Diseases is one of the four hospitals managed by Mahidol University located at the Faculty of Tropical Medicine, Mahidol University. Nowadays, the Hospital has 250 beds. It specializes in malaria, dengue, parasitic infections, and leptospirosis, as well as general medicine such as diabetes, hypertension, and nephropathy. The Hospital was busy throughout 2015, with over 39,000 outpatient cases and nearly

2,300 inpatient cases. Non-communicable diseases dominated the outpatient cases, with high blood pressure and high cholesterol contributing more than half of all visits.

More than half of the in-patients were admitted with dengue, a large increase from 2014 in terms of both absolute number and percentage. In 2014, there were 300 inpatients with dengue, 32% of the total, while in 2015 there were 1,118, which was 52% of the total inpatients. This sharp increase was due to two contributing factors: the dengue outbreak that affected much of Asia, and the fact that the Hospital is now an established specialist center, receiving dengue patients from many other hospitals.

- The hospital's fever clinic provides 24 hours a day for accurate and efficient diagnostic services.

- It also has 3 departments in Alternative Medicine, Thai Traditional Medicine, Chinese Traditional Medicine, and Physical Therapy.

- The travel Clinic provides useful information for Thai and foreign travelers and organizes the residency training in travel medicine.

- TropMed Homecare provides elderly care in a safe and warm home near the hospital, which takes care of its elderly customers' physical and mental health.

2. Faculty of Tropical Medicine also established two research stations: an epidemiology of malaria and parasite research center at Suan Phueng District, Ratchaburi Province. *Rajanagarindra Tropical Disease International Center*, so called *RTIC*, one of field research centers sited in the heart of malaria endemic area along Thai-Myanmar border, free-of-charge services at this center are widely benefit to those people living in its vicinity area who

suffered from malaria and other tropical diseases in terms of diagnostic services and primary medications. And Kanjanaburi Tropical Disease Center, a part of Mahidol University, Kanjanaburi campus, located in Saiyoke District, a center for teaching and seminars for students and staff. Both of the centers are field research centers involving in community tropical disease level.

3. FTM departmental academic and laboratory services to other institutes, hospitals, researchers and public health workers as follow:

- Identification of medically important insects/arthropods.
- Providing mosquito specimens for teaching/research, upon request.
- Testing insecticide efficacy and susceptibility in medically important insects followed WHO standard procedure.
- Providing information and advice on the control of various insect vectors.
- Developing data base information on helminths, its identification, transmission, diagnosis and drugs which will be readily accessible through internet in the near future.
- Providing consultancy and general information on helminthic diseases to the public upon request and through leaflets.
- Giving service on worms identification, serodiagnosis tests and fecal examination for helminthic infections.
- Examination for parasitic helminths from various specimens, feces, soil, sewage, sludge and others.
- Viral diagnosis services such as dengue and Zika virus.

4. Translational research. In 2015, the Faculty increased its focus on ensuring that research translates into increased

health quality. The Faculty works closely with three key communities in Thailand to target neglected or even forgotten health issues. For example, our work in Tha Song Yang District, Tak Province, will ultimately lead to a practical method to reduce the impact of amebiasis.

5. In 2016, a new addition to the learning opportunities on offer – the Discovery Museum of Tropical Diseases. The museum provides the public with interactive

and informative exhibitions that allow them to learn more about the Faculty and its past, present, and future work. In addition, critical information will be made available on the prevention and identification of common tropical diseases.

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