TROPMED

Annual Review 2017

Faculty of Tropical Medicine
Mahidol University

Contents

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Message from the former Dean

Looking back over the last four years, we have seen changes at the Faculty and we also have witnessed a shift in Thailand's disease landscape. We can look at the changed disease landscape positively as infectious diseases decreased dramatically. Meanwhile, there were increases in cases of non-infectious diseases, which are now the leading cause of death in the country. We can no longer focus only on our traditional concept of tropical diseases. The disease landscape is transforming, and we should, too.

Work at the Hospital for Tropical Diseases has clearly revealed a growing need to prevent, manage and treat non-infectious diseases. In proactive response to this trend, we committed to providing healthcare services for both infectious and non-infectious diseases. We are now able to address the needs of Thailand's aging society with our HomeCare and Intermediate Ward. And we remain leaders in treating infectious diseases, like dengue, malaria, and hemorrhagic fevers. We have remained true to our specialization, yet broadened our capability.

Our greatest achievement was in human resource development. During the last four years, many of our academic staff have attained promotions, with more than 50% attaining higher academic rank. We developed our staff's skills and abilities, our research culture in our Faculty continued to be very strong, and there was an upsurge in publications. We produced a lot of promising researchers. This was the aspect of my work I am most proud of, bringing out the potential of our people.

Because of these advances, we are well placed to continue our improvements. In terms of research, Thailand faces three challenges. First, we have limited numbers of Thai researchers compared with other Asian and western countries. Second, the focus and rationale for our research; to contribute fully to international research, Thailand needs to focus more on translational research. While it is certainly a challenge, if successful, it will improve the health, quality of life, and socio-economy of our communities, and improve the future for our descendants. Hence, our main goal is to translate knowledge for the benefit of humankind. Lastly, the budget; while it may be limited in terms of equipment and infrastructure, I believe we can surmount these challenges when we combine our efforts towards our vision–to be a world leader in tropical medicine.

“Persevere, focus, and I feel sure you will achieve your highest potential!”

It was an exciting and demanding period, providing leadership to nearly one thousand colleagues, friends, collaborators, and support staff. To achieve our aim to improve the lives of others, by being a world leader in tropical medicine, we should all strive to maximize our potential, combining our skills, talents and efforts synergistically. At the same time, we need to think creatively, to innovate and advance research and every aspect of the Faculty. Being a part of this ongoing process is one of my fondest memories from my period as Dean of the Faculty of Tropical Medicine.

To all members of the Faculty, may I offer my sincere thanks for your hard work, your commitment, and your achievements. Persevere, focus, and I feel sure you will achieve your highest potential!

Towards a healthier, happier future for us all,

Prof. Yaowalark Sukthana

Dean's Foreword

"Our greatest achievements of 2016 were generating new knowledge at national and regional levels"

Prof. Dr. Pratap Singhasivanon

The year 2016 will be remembered as one of many significant events. I will begin by reflecting on the most significant and historical of them for the Thai people, the passing of His Majesty King Rama IX on 13 October 2016, and the many valuable things we can learn from His Majesty's philosophy, example, and contributions to Thailand and its people. His Majesty King Rama IX, with His Majesty King Rama X, then Crown Prince, graciously visited the Faculty of Tropical Medicine soon after its establishment in 1960, to open the first TropMed building, and showed a special ongoing interest in the work of the Faculty.

Nowadays, we face numerous challenges, due to continuous local and global socio-economic changes, which influence the demands on, and responses by the Faculty, and are reflected in our changing areas of focus and specialization. Many first-generation tropical diseases are declining in prevalence and may soon be eliminated. Malaria is targeted for elimination in Thailand by 2027, and in the ASEAN region by 2030. Advances in the prevention and management of well-established tropical infectious diseases will enable us to focus more on tackling emerging diseases, especially those passed from animals to humans, and non-communicable/lifestyle diseases. We must adapt to meet this challenge; we are therefore planning and constructing the necessary infrastructure, including a level 3 biosecurity lab (BSL3), which will enable us to study hazardous pathogens safely, in 2018. We are also initiating multi-disciplinary joint actions across our 11 departments, to build synergy and increase translational research.

We are very fortunate to have skilled, knowledgeable, experienced, adaptable and resilient people to realize our translational research plans. We have started working more closely with industry through "Academic Entrepreneurship", to commercialize our research outcomes and products, and thereby help sustain our research capacity. Increasing international partnerships and strengthening governance will help us to realize our objective to be a world leader in tropical medicine. We are developing products of interest to the commercial biomedical sector. Several universities

in the US, Europe and Japan, have already developed a network of commercial partnerships, and we will strengthen and consolidate this concept over the coming years. We are in the early stages, with the project initially being led by the ORS and launched in 2017 and 2018.

Our greatest achievements of 2016 were generating new knowledge at national and regional levels on antimalarials, parasite detection, the use of point-of-care high-throughput technology in the field, and advanced malaria vaccine studies with humanized mice. Several of our staff have become members and consultants of international organizations.

I am particularly looking forward to continuing preparations for the 2020 International Congress for Tropical Medicine and Malaria (ICTMM 2020) throughout 2017. This year, we are hosting conferences in travel medicine, continuing our dengue-vaccine trial work, and building new intervention partnerships with Oxford University and others.

During 2017, most Faculty members will contribute to developing our strategy for the next 10 years, as we evaluate and benchmark the Faculty regionally and globally, to define what being "world class" means for us. Currently, 67% of our publications are in impact quartile 1 journals, and we are aiming to increase this to 75% within two years by utilizing our concentration of talented students, staff, resources, and governance. We are focusing on global strategic scenarios, such as demographic transition and the emerging trends we need to adapt to and direct our resources into, zoonotic infectious diseases, disaster-related food and water-borne diseases, ecological change, and Thailand's aging society. We must prepare our staff and infrastructure, whilst engaging with more partners. We need not only new ideas, but the means to translate them into action.

Our real-time Faculty management information analytics dashboard is launching this year, offering comprehensive integrated Faculty data, including finance, HR, Faculty expenditure, education, and research income & expenditure, which we can use to view and plan budgets and targets, for risk & knowledge management, and to set performance-based incentives. This new system will improve quality assurance and will be used for effective management & decision-making in the Faculty.

The Bangkok School of Tropical Medicine continues to promote its curriculum, with a master's degree in biomedical informatics currently being developed online with technical input and investment from the Faculty of Graduate Studies. This will be Mahidol University's first Massive Open Online Course (MOOC), starting in 2019. The dengue laboratory in the Tropical Medicine Diagnostic Reference Laboratory (TMDR) is currently obtaining ISO 15189 and 15190 accreditation, with the toxoplasmosis laboratory and other laboratories to follow shortly.

Our cardiologist is starting an NIH placement this year, many other members of staff are joining overseas conferences throughout the year, and a member of staff is returning from gaining experience in genetic statistics at Imperial College. Throughout 2017, we will continue to expose staff in our research incubator to these types of environments and opportunities, to bring fresh ideas and methodologies to the Faculty as we establish stronger partnership networks.

In my capacity as a researcher, I am overseeing field research and drug interventions for our new ivermectin clinical trial, and continue sitting on many global committees, including the Malaria Policy Advisory Committee in Geneva, Switzerland.

I wish to thank everybody for allowing me to serve the Faculty for a third term. As HRH Prince Mahidol of Songkla stated, "All of the knowledge that we produce must be for the benefit of Mankind", and this is our ultimate goal.

Strategic Plan

STRATEGIC PLAN (2014-2017)

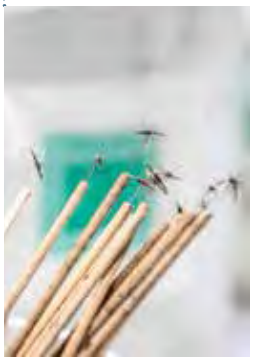
The five year plan covers the eight key areas that are addressed as part of the Faculty's vision to be a world leader in Tropical Medicine. For each key area there is a clear aim and the Faculty works towards achieving that aim through its activities and prioritization.

TEACHING EXCELLENCE

The Faculty aims to make the Bangkok School of Tropical Medicine **one of the top five Tropical Medicine schools in the world,** by further improving its teaching quality and providing courses and curricula that reflect the groundbreaking research conducted by the Faculty's researchers.

RESEARCH AND INNOVATION EXCELLENCE

The Faculty is a key driver in Tropical Medicine research in the ASEAN region, and will strive to continue pushing the boundaries of knowledge even further, with the aim to **be one of the top three Tropical Medicine research faculties.** This will be achieved by continuing to increase the number of publications and their impact.



OUTSTANDING CLINICAL OUTCOMES

The Hospital for Tropical Diseases aims to provide patients with the **highest level of care in Southeast Asia,** by offering them the country's leading specialists in Tropical Medicine, excellent service and the most modern facilities and medical equipment available.

PEOPLE EXCELLENCE

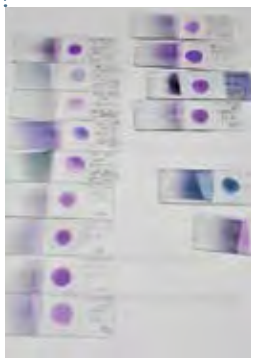
As people are the most valuable resource for the Faculty it will continue to recruit the best employees at all levels. In order to attract the top talent it will invest heavily in co-workers' career development and in making their work at the Faculty challenging and rewarding. The Faculty aims to be the **best university employer in Thailand.**

INFRASTRUCTURE EXCELLENCE

Through the "TM Green" campaign the Faculty aims to **reduce its footprint** by encouraging the habit of reducing, reusing, recycling, and repairing resources. The campaign raises employees' awareness about maintaining a greener environment, both locally and globally.

CUSTOMER AND COMMUNITY SERVICE EXCELLENCE

The Faculty is committed to valuing the needs of its customers and stakeholders by providing quality academic and other services. The Faculty aims to be in the **top 10% of service providers in Thailand.** The Faculty works continuously to improve services, and to adapt to the ever-changing environment it operates in.



ALLIANCE EXCELLENCE

One of the Faculty's main strategic advantages is its extensive network of collaborators and partners and the Faculty strives to constantly strengthen and expand these connections. Aiming to be **in the top 10 preferred partners** of all of its collaborators, the Faculty works to maintain successful and mutually beneficial relationships with national and international partners.

LEADERSHIP AND MANAGEMENT EXCELLENCE

Effective leadership and management is a key component to ensure the Faculty's continued success, and it invests heavily in developing skills. The Faculty aims to **have 85% of Committee members trained in *Education Criteria for Performance Excellence***, a 160 hour course that forms the basis of a valuable framework to help plan, perform, and measure results.

Administrative Board

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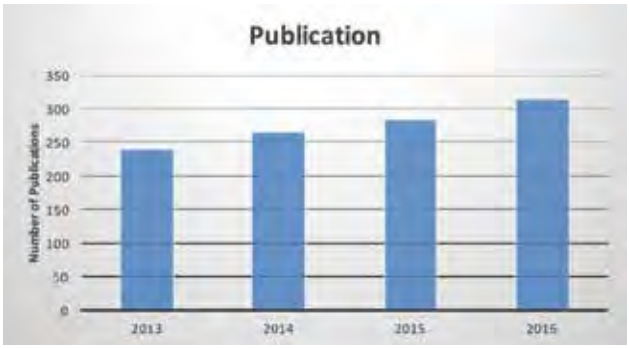
Statistical Summary

RESEARCH

Publications continued to increase in 2016, with 313 published research articles from the Faculty and its collaborators. This level of research and output shows the Faculty's progress towards becoming a top Tropical Medicine research facility by 2018.



Current Executive Team

Prof. Sirivicha Krudsood
Deputy Dean for Research and International Relations

Former Executive Team

Dr. Jetsumon Prachumsri
Deputy Dean for Research

FINANCES

The Faculty has two distinct areas of income – government funding and Faculty revenue. The Faculty revenue category contains a variety of different sources, including student and patient fees, national and international research grants, and rent and service agreements. In 2016, the total income of the Faculty was 862 million THB. Of that total, 342 million THB was from the government budget, and 520 million THB from the Faculty's revenue. (Data from 2 October 2015 – 30 September 2016)

Current Executive Team

Assoc. Prof. Porntip Petmitr
Deputy Dean for Administration and Finance

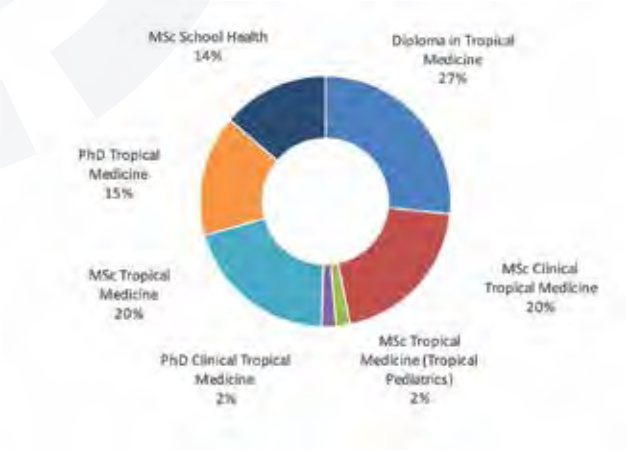
Former Executive Team

Assoc. Prof. Supatra Thongrungkiat
Deputy Dean for Finance & Assets

BANGKOK SCHOOL OF TROPICAL MEDICINE

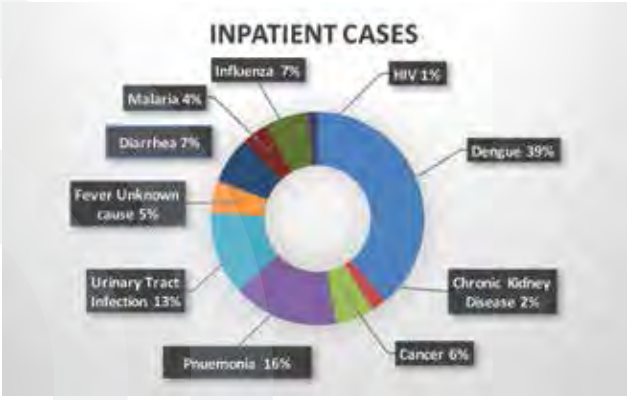
The School continues to attract international students with 51% of total enrollees coming from outside Thailand in 2016.

The Graduate Diploma and Master of Science in Biomedical and Health Informatics will move to online courses, and are temporarily closed until 2019.



HOSPITAL FOR TROPICAL DISEASES

The Hospital had 29,383 outpatient cases and 1,164 inpatient cases in 2016, a drop from 2015's over 39,000 outpatient cases and nearly 2,300 inpatient cases. Non-communicable diseases still dominated the outpatient cases, with high blood pressure and high cholesterol contributing more than half of all visits.



Current Executive Team

Assoc. Prof. Warangya Wongwit
Assistant Dean for Education

Lect. Dr. Amornrat Aroonrual
Assistant Dean for Student Affairs

Former Executive Team

Prof. Sasithon Pukrittayakamee
Deputy Dean for Education

Asst. Prof. Kasinee Buchachart
Assistant to Deputy Dean for Student Affairs and Special Activity & Secretary of the Faculty

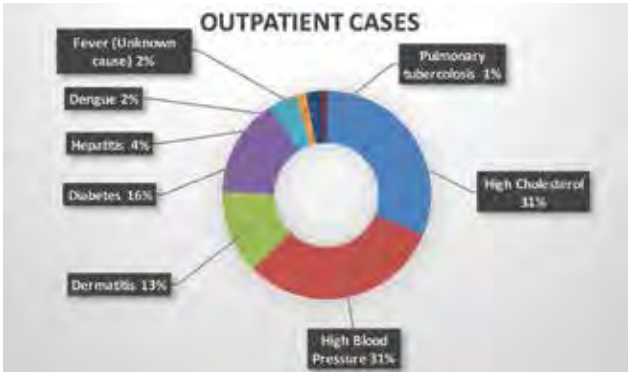
Current Executive Team

Prof. Polrat Wilairatana
Director of Hospital for Tropical Diseases

Former Executive Team

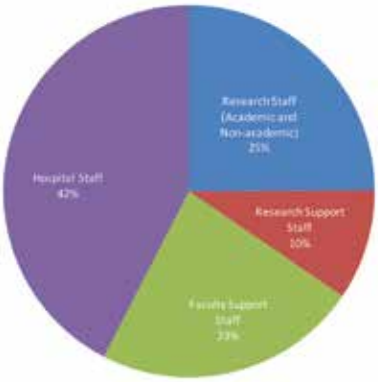
Asst. Prof. Dr. Udomsak Silachamroon
Director of Hospital for Tropical Diseases

As well as a decreased number of inpatient cases in 2016, the dominance of dengue cases also decreased from 2015's 52% to 39%. However, dengue still has the highest number cases, 454 of the 1,164 total inpatient cases.



HUMAN RESOURCES

A total of 811 staff were working in the Faculty in 2016. The largest proportion of these was the healthcare and administrative staff in the Hospital for Tropical Diseases. The two categories of support staff, Research and Faculty, together made the next largest group. This group includes many different roles, such as laboratory technicians, maintenance staff, and administrative staff. The support staff enable the Faculty to run as smoothly as possible, allowing Research and Teaching Staff to concentrate on their work.



Current Executive Team

Dr. Wirongrong Chierakul
Deputy Dean for Quality Development

Former Executive Team

Prof. Polrat Wilairatana
Deputy Dean for Value Creation

INFRASTRUCTURE AND ENERGY USE REDUCTION

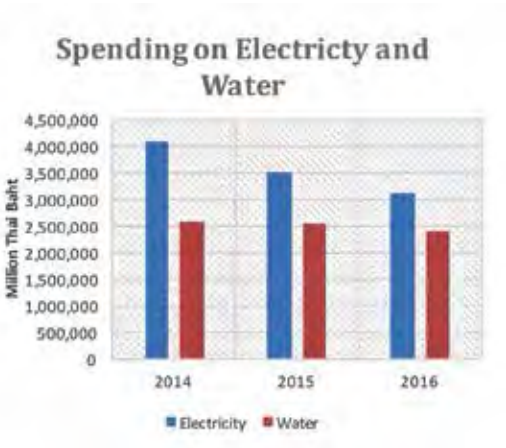
The Faculty continued to raise awareness of environmentally beneficial behaviors and work towards reducing its use of electricity, water, and paper. In 2016, the spending on both electricity and water was successfully reduced while the number of sheets of paper used slightly increased.

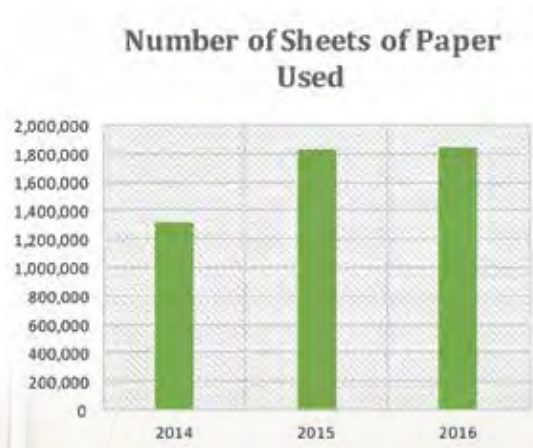
Current Executive Team

Dr. Surapon Yimsamran
Deputy Dean for Facilities and Environment

Former Executive Team

Prof. Dr. Rungsunn Tungtrongchitr
Deputy Dean for Central Management





Departments






> When the Faculty opened in 1960 there were just five departments but with increased specialization this number is now eleven. Covering a broad range of Tropical Medicine areas the departments conduct research, teach students from the Bangkok School of Tropical Medicine and provide services to both the academic and healthcare communities.
>
> The following pages highlight the main research areas of each department as well look at their work and achievements in 2016.

Clinical Tropical Medicine

Asst. Prof.
Weerapong Phumratanaprapin
– Head

“ One of the New England papers described the results of a small phase 2 study of KAF156, an antimalarial agent. ”

The Department of Clinical Tropical Medicine was founded in 1960. It now consists of twelve subunits, and conducts research across a wide range of areas – from tropical diseases, such as malaria and melioidosis, to global health issues, such as HIV/AIDS and viral hepatitis. More recently, the Department has become involved in the increasingly important field of Travel Medicine.

As well as research, the Department provides training and education for medical professionals and students at the Faculty and it is home to vaccine trials; recent trials include candidate vaccines for HPV, HIV, cholera, and shigella infections.

The Department has a large number of international collaborators, including the GeoSentinel Surveillance Network, International Society of Travel Medicine; the Department of Pediatrics, Columbia University, U.S.A.; and the World Wide Antimalarial Resistance Network (WWARN).

Domestically, the Department works with government provincial and district hospitals in a range of settings and locations, including Tak, Loei and Udon Thani provinces, which allows researchers to collect the most up-to-date and representative information on critical health issues affect Thailand.

MAIN RESEARCH AREAS :

- Malaria
- Melioidosis
- Travel Medicine
- Dermatology
- Dengue
- Scrub Typhus
- HIV/AIDS
- Vaccine Trials

2016 HIGHLIGHTS :

- Nearly 50 publications, including 3 in The New England Journal of Medicine, a journal with an impact factor of 59.558. One of the New England papers described the results of a small phase 2 study of KAF156, an antimalarial agent. In the study, KAF156 showed antimalarial activity without evident safety concerns. Another paper was an epidemiologic analysis of symptomatic dengue in children across ten countries in Southeast Asia and Latin America. It found the burden of dengue to be generally higher and the disease more frequently severe in Asian countries. The third paper described a study that found dexamethasone did not reduce mortality among patients with HIV-associated cryptococcal meningitis and was associated with more adverse events and disability than the placebo.

- The Department, through its Travel Clinic strengthened its partnership with the GeoSentinel Surveillance Network. GeoSentinel is a global communication and data collection network for the tracking of travel-related illness. The network is coordinated by the International Society of Travel Medicine and supported by the US Centers for Disease Control. In May, Watcharapong Piyaphanee presented interesting and educational cases from the Clinic at the Network's annual meeting. He was also involved in the Network's publications throughout the year.
- Punnee Pitisuttithum, with Alain Bouckenooghe of Sanofi Pasteur, published a well-received editorial in the Expert Review of Vaccines on the first licensed dengue vaccine. The editorial, which was read over 1400 times in the first 7 months after publication, outlines the background of the vaccine, CYD-TDV and the disease. CYD-TDV is a tetravalent, live attenuated, chimeric dengue vaccine in a yellow fever 17D backbone developed by Sanofi Pasteur. The article concludes that approval of the vaccine represents a major milestone in the prevention of dengue, but that it should be complementary to existing integrated intervention and education strategies.
- As a clear reminder that the Department is not only involved in research, Yupaporn Wattanagoon was awarded the Role Model Teacher Award by the Faculty Senate. The award recognizes Yupaporn's commitment to student learning and development. She teaches in many of the courses offered at the School and consistently impresses students not only with her expertise but also her evidence-based approach to both medicine and teaching.

2016 SOCIAL IMPACT :

- Throughout the year, 15 Thai doctors were enrolled in the Department's Travel Medicine residency program. The residency is a unique opportunity for the doctors, who came from all over Thailand, to learn from national leaders in travel medicine. Many plan to begin travel clinics when they return to their hospitals, giving patients in the provinces the same access to specialist care and advice as those in the capital.
- The Department maintained its partnership with the Thai Ministry of Public Health (MoPH) and continued to provide advice on the establishment and refinement of clinical guidelines for the treatment of patients with malaria, ensuring the guidelines reflect best practice and up-to-date research.
- Selected medical staff from the Department volunteered their time and expertise with local community hospitals in western Thailand. The team shared their management and medical experience across a variety of tropical diseases, including parasitic diseases and malaria.

2016 FACTS AND FIGURES :

Number of publications	49	Number of oral presentations	2
Number of poster presentations	5	Number of awards	6
Number of academic staff	26	Number of support staff	16
Number of students	38		

Helminthology

Assoc. Prof.
Paron Dekumyoy
– Head

"Molecular differentiation of the liver fluke *Opisthorchis viverrini* eggs was achieved. This will help increase the accuracy of predictions of the risk of cholangiocarcinoma in areas inhabited by the flukes."

The Department of Helminthology has long been involved in both teaching and research. The Department now also offers key helminthology-related services, including the Immunodiagnosis Unit and the International Reference Centre for Food- and Water-Borne Parasitic Zoonoses, a public database to provide information about the identification, transmission, diagnosis, and treatment of helminthic diseases.

In 2016, the Department collaborated with research groups from and outside the Faculty including Japan, China, France, Australia, and Spain. One example is with the Asahikawa Medical University, Japan in a study involving taeniasis and cysticercosis in humans and/or swine. The study was conducted in Tha Song Yang District, Tak Province.

MAIN RESEARCH AREAS :

- Morphology
- Epidemiology
- Host-parasite relationship and therapy
- Immunodiagnostics
- Population genetics and bio-diversity

2016 HIGHLIGHTS :

- Molecular differentiation of the liver fluke *Opisthorchis viverrini* eggs was achieved. This will help increase the accuracy of predictions of the risk of cholangiocarcinoma in areas inhabited by the flukes. This increased accuracy is important for both research and patient care.
- The Department commissioned slides and specimens of a large range of helminths for use as teaching materials. Promoting and selling these commercially produced academic tools is a new venture and should benefit both the Department and the purchasers, and teaching institutes in Thailand and other countries.

2016 SOCIAL IMPACT :

- The Department of Helminthology's research is heavily involved in a wide range of human helminths, such as soil-transmitted helminths, *Gnathostoma, Angiostrongylus*, and *Paragonimus*, and the like, which cause helminthiases in Thailand and other countries. Several species of human endemic helminths are imported by travelers who visit areas that may include non-endemic areas. Much of the Department's research is reported in

publications in Thailand and other countries. Their research provides information that helps other scientists in their studies.

- Five species of human *Gnathostoma* have been reported. A *Gnathostoma* worm is quite dangerous when invading internal organs, especially the brain and the spinal cord. Several suspected gnathostomiasis cases from Thailand and other countries have been sent to the Immunodiagnostic Unit for Helminthic Infections, at the Department of Helminthology. Therefore, the detection of gnathostomiasis caused by other human *Gnathostoma* species, not only *G. spinigerum,* has been studied by differentiation among immune reactions using several kinds of native and molecular antigens of *G. spinigerum* larvae and immunoglobulins.
- The Department's research goals regarding the epidemiology of helminths and helminthiases have been achieved, thus benefiting physicians administering treatment, when the patients' history of visiting those areas is known. The results also benefit researchers and others interested in these parasites.
- The research results are transformed into routine diagnostics, helminthic products, field surveys, academic training, etc. Therefore, a regular training course on helminths and helminthiases has been established, enabling staff of universities, government and non-government bodies, to gain such knowledge. Infections by those helminthes are indicated in clinical forms and letters from Thailand and several countries.
- Medical doctors, parasitologists, and many others have requested parasite identification via specimens and multi-media. The Department's multifaceted helminth/helminthiasis research is essential to the medical community, and also has a major impact on epidemiologists, parasitologists, immunologists, and on public health at large.

2016 FACTS AND FIGURES

Number of publications	20	Number of oral presentations	-
Number of poster presentations	1	Number of academic staff	5
Number of support staff	11	Number of students	13

Medical Entomology

Assoc. Prof.
Narumon Komalamisra
– Head

"The Department has expertise in the taxonomic identification of important insect vectors and arthropods, and Department scientists have discovered many new species."

The Department of Medical Entomology has a long history of research, education, and public service. The Department has expertise in the taxonomic identification of important insect vectors and arthropods, and Department scientists have discovered many new species. The Department also conducts studies in a wide range of research areas, from basic to applied science, biology and ecology, vector-parasite relationships, molecular entomology and vector control via chemical and plant-derived insecticides and other bio-agents. The Department of Medical Entomology also houses an insect vector-rearing laboratory, a service that helps scientists study various strains of mosquito vectors, and a comprehensive mosquito museum and reference center.

In 2016, the Department collaborated with a number of research groups including Mahidol-Oxford Research Unit (MORU), Walter and Eliza Hall Institute of Medical Research, and Malaria Consortium. They also continued the partnership with Kao Corporation, a Japanese consumer product manufacturer, to study the sensory mechanism triggering the host-seeking behaviors of mosquitoes.

MAIN RESEARCH AREAS :

- Malaria
- Chikungunya
- Leishmaniasis
- Dengue
- Scrub typhus

2016 HIGHLIGHTS :

- First classification of bat ectoparasite, *Leptocimex inordinatus*, found in the bat-dwelling caves of Kanchanaburi Province, Thailand. This study was led by Dr. Rutcharin Potiwat with colleagues in the Department.
- Dr. Patchara Sriwichai and fellow researchers, by in-depth complex, presented the current situation of the vector-parasite relationship of malaria in Thailand.
- Mr. Tatchai Subsuebwong, one of their MSc students received the consolation award for their poster presentation entitled "Insecticidal Activities of *Piper retrofractum* Extracts Against *Aedes aegypti* and *Culex quinquefasciatus* (Diptera: Culicidae) from The National and International Graduate Research Conference (NIGRC) 2016 at Khon Kaen University, Thailand.

2016 SOCIAL IMPACT :

- The study of repellents is one of their research involving vector control. They screen the repellency property of various local plants and testing and formulation development of plant-based repellent. The Department shared their research knowledge and repellent products to local communities. They educated the people to be more concern about personal protection from mosquito bites. For example, they informed the people what plants can be found in their localities and can be extracted to use as a repellent. They also offered training on repellent product preparation such as extraction of essential oil, to interested people and students from different schools.
- Assoc. Prof. Komalamisra's research aims to analyze the efficacy of insecticide-treated clothes. These insecticide-treated clothes are recommended to people who mostly work and exposed outdoors. However, identifying the factors that can influence the efficacy of insecticide-treated clothes are rather complicated. For instance, they have to calculate carefully the amount of insecticide incorporated into the fabric of the clothes. The result of their research work can provide more information in order to improve clothes-treatment technique and better protection from outdoor malaria transmission. This research is in collaboration with Dr. Jeffrey Hii of the Malaria Consortium.
- Another project of Dr. Patchara is the study of the biology of the vector in malaria endemic areas. They shared their research information to the local community in ThaSongYang District and Tak Province for further development of vector and malaria control in the area.
- The Department arranged a workshop for entomological staff at The Office of Disease Prevention Control 5 to cover five provinces in the western part of Thailand. They trained the staff in developing vector surveillance skills and learning basic research in vector-borne endemic areas.

2016 FACTS AND FIGURES :

Number of publications	14	Number of oral presentations	6
Number of poster presentations	10	Number of academic staff	9
Number of support staff	13	Number of students	16

Microbiology and Immunology

Asst. Prof.
Pornsawan Leaungwutiwong
– Head

"The Department of Microbiology and Immunology specializes in the study of bacterial, parasitic, and viral pathogens, and the immunological responses they cause in humans."

The Department of Microbiology and Immunology specializes in the study of bacterial, parasitic, and viral pathogens, and the immunological responses they cause in humans. It also provides diagnostic services to third-party health providers. The Department works closely with the Faculty's hospital and most other departments within the Faculty and across other Mahidol faculties, with Chulalongkorn University, Chiang Mai University, and Kasetsart University in Thailand, and with numerous other institutions in Thailand and 11 other countries.

The Department is currently collaborating with Chulalongkorn University to produce a book on the identification and diagnosis of Nipa virus, based on research with bat colonies in Chachoengsao Province.

MAIN RESEARCH AREAS :

- Dengue
- Melioidosis
- Emerging Tropical Mycoses
- ESKAPE Pathogens (Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa, and Enterobacter species)
- Chikungunya
- HPV (Human Papillomavirus)
- Zika
- Leptospira

2016 HIGHLIGHTS :

- Discovering the existence of a new pathogenic species, *Staphylococcus argenteus,* resulted in a need to determine whether *S. argenteus* and *S. aureus* should be distinguished separately in routine practice. A collaborative study led by Narisara Chantratita investigated misdiagnosis between *S. argenteus*, a globally distributed cause of human infection, and *S. aureus*, to determine whether there is clinical utility in distinguishing between the two. It was concluded that clinical differences exist in association with sepsis caused by *S. argenteus* versus *S. aureus*. *S. argenteus* precipitates significantly less respiratory failure than *S. aureus*, with a similar but non-significant trend for shock. This may be related to the heightened antimicrobial susceptibility of *S. argenteus* and the expression of fewer toxin genes. The data suggested that treatment of *S. argenteus* infection does not require different antimicrobial regimens.
- A three-day training workshop on laboratory diagnosis of emerging and re-emerging tropical diseases was held in July 2016, with 30 attendees. It covered basic knowledge

and the application of different methods of diagnosis for viral infections, the identification of aerobic bacteria and fungi, and production of diagnostic tools for microbiological diagnosis & learning, e.g., latex agglutination kit and immunofluorescent for detecting *Burkholderia pseudomallei* (the causative agent of melioidosis) from bacterial culture and in clinical specimens.

- A recently developed rapid indirect enzyme-linked immunosorbent assay (ELISA) provides a platform for evaluating different antigen candidates of *B. pseudomallei*. Among several antigens *tested,* studies by the Department and others have highlighted the potential of *B. pseudomallei* O-polysaccharide (OPS) as a target for further development of a point of care (POC) serodiagnostic test for melioidosis.

- Researchers in the Department's Medical Mycology and Virology Laboratory, under the supervision of Assoc. Prof. Natthanej Luplertlop, analyzed the contamination of *Scedosporium* spp. in soil samples collected from public parks in Bangkok and other high-population-density and tourist attractions in six geographical regions in Thailand. These studies aimed to investigate the correlation between geological distribution and contamination with *Scedosporium* spp. Notably, the results showed that there are 16 unidentified species of Scedosporium. The discovery of four new species will be further confirmed together with Dr. Ana Alastruey-Izquierdo (Mycology Reference Laboratory, National Centre for Microbiology, Instituto de Salud Carlos III, Madrid, Spain). The Department is also developing a new Multilocus Sequence Typing (MLST) identification technique for *Scedosporium* spp.

- During 2016 Professor Dr. Srisin Khusmith received a Mahidol University Award for Excellence in Teaching during the previous academic year, and Assoc. Prof. Narisara Chantratita received an Outstanding Distinction Research Award (Medical Science) from the National Research Council of Thailand.

2016 SOCIAL IMPACT

- A two year Zika-virus project, funded by the National Science and Technology Development Agency (NSTDA), started in October 2016 and aims to improve Zika diagnostic testing. A real-time PCR Zika diagnosis service was established to provide testing for local hospitals. As this testing process is slow (3-4 hours) and expensive (1,500 baht per test), a more rapid test is being developed with a hopeful duration of 15 minutes and cost of 500 Baht per test. The Office of Disease Control, Ministry of Public Health, has a program to identify Zika patients throughout Thailand, collect mosquito samples in the area, and send them to the Department for testing.

- Next-generation sequencing is currently being used for the study of the influenza virus, to identify the cause of different symptoms in patients with the same strain of the virus.

2016 FACTS AND FIGURES :

Publications	20	Oral Presentations	3
Poster Presentations	9	Academic Staff	11
Number of Support Staff	17	Number of Students	33

Molecular Tropical Medicine and Genetics

Assoc. Prof.
Mallika Imwong
– Head

“ Assoc. Prof. Mallika Imwong received the 2016 Outstanding Technologist Award for her research on “Detection of Submicroscopic Malaria Parasitemia by Ultra-sensitive qPCR” from the Foundation for the Promotion of Science and Technology ”

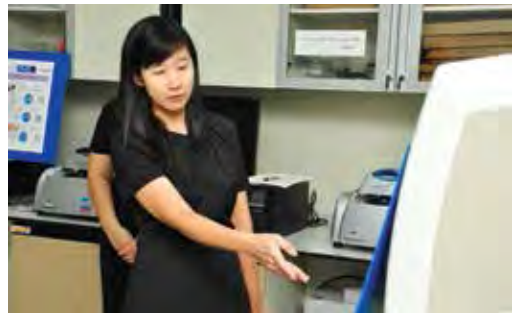
The Department of Molecular Tropical Medicine and Genetics specializes in bioinformatics, genomics, proteomics, and other molecular aspects of malaria, scrub typhus, leptospirosis, helminths, melioidosis, and human papillomavirus. Its aim is to translate the knowledge gained in its molecular biology laboratories to clinical applications, public-health policy development, and commercial applications.

2016 HIGHLIGHTS :

- Assoc. Prof. Mallika Imwong received the 2016 Outstanding Technologist Award for her research on “Detection of Submicroscopic Malaria Parasitemia by Ultra-sensitive qPCR” from the Foundation for the Promotion of Science and Technology, the “2016 Thailand Frontier Researcher Award”, the “2016 Thailand Hot Researcher Award” from Thomson Reuters in recognition of pioneering a new frontier in research based on core papers comprising the world’s top 1% of highly cited papers in the field of immunology, and the Thailand Hot Researcher Award for the most rapidly cited paper of the last two months in the year 2016.
- Assist. Prof. Usa Boonyuen and Assist. Prof. Onrapak Reamtong received funding under the Professional Development Programme for Mid-career Researchers under the UK’s Newton Fund.
- Assist. Prof. Santi Maneewatchararangsri spent six months at Norwich Medical School, University of East Anglia, under the Newton Fund’s Researcher Links Programme, and Dr. Supachai Topanurak spent two months at the Faculty of Medicine, Imperial College, funded by a staff mobility grant.

2016 SOCIAL IMPACT :

- The Department collaborated on a study to assess the geographic prevalence of point mutations in *P. vivax* genes leading to sulfadoxine–pyrimethamine resistance in Lao PDR, India, and Colombia. The data strongly suggest that, when used primarily to treat falciparum malaria, sulfadoxine–pyrimethamine can exert substantial selective pressure on *P. vivax* populations, leading to point mutations.
- Several Department staff were involved in a detailed functional analysis of the properties of two clinical glucose-6-phosphate dehydrogenase (g6pd) variants, an X-linked hereditary genetic defect that is the most common polymorphism and enzymopathy in humans. The report indicated that protein instability and reduced catalytic efficiency were responsible for reduced catalytic activity.
- The Department was involved in the molecular characterization of genes encoding the *Plasmodium vivax* reticulocyte binding protein (PvRBP) family. The findings suggested that antibodies to the protein may interfere with invasion by *P. vivax* reticulocytes.
- Collaborative research into a direct-acting anti-Ebola agent for use in preclinical and clinical trials showed that human antibodies that target the intracellular Ebolavirus VP40 protein inhibit cellular egress of Ebola virus-like particles.
- Assist. Prof. Piengchan Sonthayanon developed an innovative new database to identify Leptospira spp. using a MALDI biotyper.
- The Department's malaria research was reported to the Bureau of Vector Borne Diseases, Ministry of Public Health, for use in policy-setting.



2016 FACTS AND FIGURES :

Number of publications	31	Number of oral presentations	1
Number of poster presentations	2	Number of academic staff	10
Number of support staff	5	Number of students	19

Protozoology

Asst. Prof.
Aongart Mahittikorn
– Head

“ In 2016, Assistant Professor Aongart Mahittikorn became the new Head of Department. ”

One of the five original departments at the founding of the Faculty of Tropical Medicine in 1960, the Department of Protozoology focuses on teaching, training, research and services in the field of medical protozoa, which includes such infective organisms as *Plasmodium falciparum*, *Toxoplasma gondii*, and *Entamoeba histolytica*, and others. The Department plays a particularly important role within the Thai medical and research community in providing diagnoses of protozoal diseases and supplying protozoal specimens to other institutions for their own research or teaching needs. The Department organizes courses in the D.T.M. & H. graduate diploma, as well as M.Sc. and Ph.D. programs.

In 2016, Assistant Professor Aongart Mahittikorn became the new Head of Department. He plans to continue recent developments in their research. He also aims to recruit more students, produce quality publications, and generate new projects that will benefit the public. Asst. Prof. Aongart has wide experience in molecular epidemiology and molecular diagnosis of intestinal protozoa, and is currently working on intestinal parasitic infections among adults and school children in rural areas of Thailand.

MAIN RESEARCH AREAS :

- Malaria
- Amebiasis
- Blastocystosis
- Microsporidiosis
- Toxoplasmosis
- Giardiasis
- Cryptosporidiosis

2016 HIGHLIGHTS :

- Recombinant Polδ-cat, PolδS, PCNA1 and ATP-dependent DNA helicase RuvB3 of *Plasmodium falciparum* were successfully expressed. It was found that the 7-acetoxypentyl-DCBG and RuvB family of DNA helicases could be potential candidates for future development of a new class of anti-malarial agents.
- Their recent study confirmed that *Cryptosporidium parvum* does not multiply in oysters, and is therefore not a biological host. Nevertheless, oysters can be an effective transmission vehicle for *Cryptosporidium* oocysts, and eating raw oysters remains a public health concern. This study revealed new insights into the epidemiology of *Cryptosporidium* in oysters.

- *Blastocystis* was found along the Chao Phraya River. Sequence analysis indicated a zoonotic risk. It is suggested that health education should be given to villagers near the river to improve their personal hygiene and community health. Since few studies have been done on *Blastocystis*, especially in Thailand, this study will provide knowledge of its epidemiology.
- Launched an English version textbook- "Atlas of Medical Parasitology with 410 color illustrations". This is the first international edition of this textbook.

2016 SOCIAL IMPACT :

- The Department's uses the diagnostic techniques they have developed to provide diagnostic services for medically important protozoa, including alle five species of *Plasmodium, Entamoeba histolytica, Entamoeba dispar, Entamoeba moshkovskii and Toxoplasma gondii*. Research is ongoing to develop an easy and more specific, sensitive test for *Entamoeba histolytica*. One example of the diagnostic techniques developed is a real-time PCR that can detect and differentiate between species of *Plasmodium*. This real-time PCR provides fast and more accurate results. These new diagnostic methods support research and better public health. For instance, many hospitals send specimens to the Department for speedy and precise confirmation of the species of malaria.
- The researchers of the Department also characterized the risk that enteric protozoa may pose to humans and their methods of transmission from animals to humans to determine the risk of transmission to public health.
- The Department of Protozoology provides two workshops each year; one is on "Diagnosis of Intestinal Pathogenic and Opportunistic Protozoa", usually arranged in March. The other is "Laboratory Diagnosis of Malaria and Leishmaniasis in Blood Specimens". In 2016, these two workshops were attended by a total of 114 participants from every part of Thailand.

2016 FACTS AND FIGURES :

Number of publications	8	Number of oral presentations	3
Number of poster presentations	3	Number of academic staff	7
Number of support staff	7	Number of students	7

Social and Environmental Medicine

Assoc. Prof.
Kamolnetr Okanurak
– Head

“ The Department’s projects range from field investigations to biotechnology. ”

The Department of Social and Environmental Medicine concentrates broadly on three tracks; 1.) Social medicine, 2.) Environmental health and toxicology, and 3.) Environmental biotechnology. Their expertise plays an important role in evaluating the health impacts of large projects, for example, investigating the altered ecology associated with dam construction, to evaluate whether it could increase the number of parasite-bearing snails. They also study the effects of chemicals or toxic substances in the environment that can affect human health.

The Department’s projects range from field investigations to biotechnology. They provide postgraduate courses leading to M.Sc. and Ph.D. degrees in Tropical Medicine as well as short training courses on environmental and health impact assessment.

MAIN RESEARCH AREAS :

- Health behaviors
- Medical malacology
- Environmental health and toxicology
- Dengue vaccine
- Schistosoma vector control
- HIV/AIDS prevention
- Cancer
- Health risk assessment

2016 HIGHLIGHTS :

- Asst. Prof. Suwalee Worakhunpiset’s poster presentation entitled, *Assessment of carcinogenic potential of chemicals release from plastic food containers and packaging through cell transformation assay* received the First Prize Poster Presentation Award in the Joint International Tropical Medicine Meeting (JITMM) 2016, held at the Amari Watergate Hotel Bangkok, Thailand, 7-9 December 2016.
- The Southeast Asian Center for Medical Malacology (SEAMM) has been maintaining the life cycle of the blood fluke, Schistosoma. Research collaboration on Schistosoma studies with the Department of Helminthology, Faculty of Tropical Medicine and Faculty of Animal Sciences and Agricultural Technology, Silipakorn University, leads to a better understanding of host-parasite interaction and offers an approach to future diagnosis and prevention.

- The Department collaborated with several international institutions, including Seoul National University, on the study "Exposure to endocrine disrupting chemicals during pregnancy – comparison study between Thailand and Korea"; Sun Yat-sen University on the study titled "Phylogenetic, transcriptomic and pathogenicity analysis of different geographical isolates of liver fluke *Opisthorchis viverrini* in infected guinea pig"; and Johns Hopkins University, and The Thailand Ministry of Public Health – U.S. Centers for Disease Control and Prevention (CDC) Collaboration (TUC), HIV/STD Research Program (HDRP) on the study "Development of a combination HIV prevention package for high-risk MSM in Bangkok."

2016 SOCIAL IMPACT :

- Dr. Suwalee's recent study aims to address the potential carcinogenic chemicals released from plastic food containers. According to her, we are exposed to different harmful chemicals every day and being able to evaluate and prevent the effects on human health can have a significant impact on public welfare. "It's not a direct contribution to public health, but we will extend to the community the prevention or control of the harmful effects of these chemicals to our health." She suggests to use safer substitutes, such as glass or ceramic containers.
- The Department hosted a two-day academic workshop on 'Fundamental of Modeling for Environmental Health Impact Assessment (EHIA)'. This workshop provided knowledge on environmental modelling for EHIA study and workshop on application software. Another workshop about EHIA was attended by students from Hasanudin University, Indonesia. Assoc. Prof. Kraichat Tantrakarnapa provided lectures to both workshops.

Number of publications	18	Number of oral presentations	-
Number of poster presentations	3	Number of academic staff	9
Number of support staff	5	Number of students	20

Tropical Hygiene

Assoc. Prof.
Jaranit Kaewkungwal
– Head

“ Assoc. Prof. Jaranit Kaewkungwal was re-assigned as the new Head of the Department in 2016. ”

Founded in 1960, the Department of Tropical Hygiene is one of the original units of the Faculty and serves as the focus of epidemiological research at the Faculty of Tropical Medicine. Much of its activity relates to public-health problems among rural populations in Thailand. To this end, the Department conducts studies in geo-spatial epidemiology, community studies, and statistical modeling, and has developed a Geographic Information System (GIS) used to track and model the spread of several diseases.

Tropical Hygiene researchers lend their expertise in data analysis and statistical modeling to a great number of units at the Faculty, including the Centre of Excellence for Biomedical and Public Health Informatics (BIOPHICS) and the Mahidol-Oxford Tropical Medicine Research Unit (MORU).

Assoc. Prof. Jaranit Kaewkungwal was re-assigned as the new Head of the Department in 2016. He led the Department from 2006 until 2012 and has also headed various studies and projects with continued collaborations from national and global research institutes.

MAIN RESEARCH AREAS :

- Malaria
- Zoonotic diseases
- Biostatistics
- Public-health informatics
- GIS and field research
- Dengue
- Epidemiology

2016 HIGHLIGHTS :

- Jaranit Kaewkungwal was reappointed Head of Department. One of his main plans for the Department (and BIOPHICS) is to move the Master’s and Diploma programs in biomedical and health informatics to online course offerings. By changing the delivery method, many more people will be able to benefit from this successful and innovative course.
- The ownership of the National Electronic Malaria Information System (eMIS) was handed over to the Ministry of Public Health (MOPH). The development and management of the system has been a collaborative project between the Department, with BIOPHICS and MOPH. The eMIS will play a key role in moving Thailand toward the national goal of malaria elimination by 2030.

- Several researchers in the Department were awarded international research grants, to enable them to carry out their work. Funds came from a range of agencies, including the University of Oxford and the Wellcome Trust. Regularly receiving grants through competitive selection processes is a good indicator of the high quality of the Department's work.

2016 SOCIAL IMPACT :

- The Department arranged and led national and international training programs and workshops from May to June, which were attended by a total of 145 participants. One of workshops focused on the epidemiological and economic modeling of infectious diseases. Transferring skills to others is a key way in which the Department creates long-lasting impact.
- The Department has been working on a new compound of anti-malarials. This anti-malarial drug is already in clinical trials and currently on phase II. "This is the start of our new anti-malaria drug testing and it will benefit the national and global community", said Srivicha Krudsood. She added, "This is new hope for the treatment of *P. vivax* malaria in the near future."

2016 FACTS AND FIGURES

Number of publications	46	Number of oral presentations	3
Number of poster presentations	-	Number of academic staff	10
Number of support staff	20	Number of students	31

Tropical Nutrition and Food Science

Assoc. Prof.
Karunee Kwanbunjan
– Head

“An interesting but challenging area of the Department’s work is the crossover with the behavioral and social sciences”

Nutrition and diet have grown into areas of great public health importance over the past decades, and the Department of Tropical Nutrition and Food Science conducts research into nutritional disorders and food science.

Areas of interest in Tropical Nutrition include obesity, malnutrition, coronary disease, diabetes, and dyslipidemia. An interesting but challenging area of the Department’s work is the crossover with the behavioral and social sciences, looking at interventions for behavioral and attitudinal change.

Recent research in Food Science has focused on microbiology, including probiotics, glycosidase enzymes, and the use of extracts from medicinal plants. The Department works closely with the Thai Ministry of Public Health and regional policymakers, making them influential in shaping policy and treatment in Thailand and the ASEAN region.

MAIN RESEARCH AREAS :

- Diabetes
- Malnutrition
- Obesity
- Metabolic Syndrome

2016 HIGHLIGHTS :

- The Department was awarded a DAAD (Deutscher Akademischer Austauschdienst, or German Academic Exchange Service) grant that will fund a 12-day study tour in Germany in 2017 for all the Department’s students and Head. The study tour will promote cultural and scientific exchange and visit Justus-Liebig University Giessen and Münster University of Applied Sciences. As part of the exchange of ideas, the students will give a presentation on how the philosophy of HM King Bhumibol Adulyadej’s Sufficiency Economy influences their approach to research and health.
- Rungarun Suthangkornkul, Pornpisut Sriworanun and Dumrongkiet Arthan, working with researchers from a range of Thai and Japanese institutions, published their investigation of a recombinant GH3 β-glucosidase that hydrolyzes furostanol 26-O-β-glucosides. This was the first known report on the expression and characterization of a plant GH3 β-glucosidase.
- Pattaneeya Prangthip, with Thai and Japanese collaborators, published a study exploring the effects of two different forms of coenzyme Q10 on diabetic rats. The impact of ubiquinol-10 and ubiquinone-10 on oxidative stress markers

was assessed, and post-supplementation bioavailability was measured. Both forms of coenzyme Q10 were found to reduce oxidative stress in diabetic rats and supplementation did not lead to accumulation in tissues or organelles during the study. The researchers suggest that further studies are needed to clarify optimal doses for various clinical indications.

- Karunee Kwanbunjan presented two papers at the 4th International Conference on PreHypertension, Hypertension and Cardio Metabolic Syndrome, held in Venice, Italy, in March 2016. The two topics were 'Association of Retinol Binding Protein 4 and Triglyceride Level in Rural Thais with Type-2 Diabetes Risk' and 'Predictive Markers for Coronary Heart Disease and Abnormal Blood-Sugar Levels among a Group of Rural Thais'.

2016 SOCIAL IMPACT :

- The equation to accurately estimate body height from knee height, developed in the Department, was published. The tool, helpful with older patients or others with mobility issues, has been used since 2015 in the Faculty's Hospital of Tropical Diseases but since publication it can benefit all hospitals in the region.
- Transferring their skills in a new but related field, animal health, six departmental researchers, along with colleagues from the Faculty and university, published a study on the potential mutagenicity of local dry canine foods and the effects of long-term consumption. After testing five brands of dry foods, the team found mutagenic potential in all of them and observed health impacts of long-term consumption in tested rats. The team recommended pet owners consider feeding their dogs with fresh food rather than dry, or carefully consider which brand of dry food they use.
- The Department fully developed Nutritional Assessment Methodology training materials that will be used annually to provide practical training for researchers and healthcare staff. The training provides instruction on how to use the localised version of NutriSurvey a professional nutrition software accurately.

2016 FACTS AND FIGURES :

Number of publications	10	Number of oral presentations	3
Number of poster presentations	2	Number of academic staff	8
Number of support staff	6	Number of students	15

Tropical Pathology

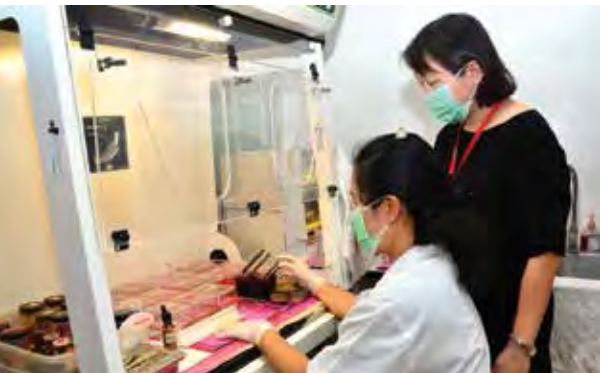
Asst. Prof.
Urai Chaisri
– Head

"In 2016, Dr. Urai Chaisri marked variations of interest in tropical diseases and expansion of collaborations in and outside the Faculty, such as Siriraj Hospital."

The Department of Tropical Pathology is composed of three units: Diagnostic Pathology, Electron Microscopy, and Tissue Culture and Immunocytochemistry. Research at the Department is centered on histopathology, immunohistochemistry and ultrastructural studies of tropical diseases, especially malaria and other parasitic diseases. The Department provides comprehensive pathological diagnostic services, including histopathology, biopsy evaluation, cytology, immunohistochemistry, and post-mortem examination. Services are provided for patients at the Hospital for Tropical Diseases and other hospitals. With its state-of-the-art microscopy equipment and expertise, the Department offers transmission electron microscopy (TEM) and scanning electron microscopy (SEM) training and services for national and regional health personnel.

MAIN RESEARCH AREAS :

- Malaria
- Parasitic diseases
- Infectious diseases
- Histopathology
- Toxicological pathology



2016 HIGHLIGHTS :

- Dr. Parnpen Viriyavejakul's current study aims to explore how *P. falciparum* malaria infection invades the endothelial cells. According to her research, morphological changes occur once the malaria parasite is attached to the endothelial cell. Examples of these changes are apoptosis, shrinking, alteration in endothelial cell permeability and fluid leakage, resulting in pulmonary edema and cerebral malaria. Alongside this study, she investigated the potential role of Sphingosine 1 Phosphate (S1P) in protecting changes in endothelial cells' permeability. S1P is a molecule that is scientifically proven to restore function and rebuild endothelial cells in burn cases with fluid leakage and hypovolemia. Dr. Parnpen seeks to discover the potential role of S1P in severe malaria, since it also targets endothelial cells. They have already submitted this study to PLoS ONE and expect publication in 2017.
- The work of Dr. Yaowapa Maneerat focused on the immune response to malaria (T-cell independent) and *Gnathostoma* sp. (immune evasion strategy). The study on immune response to malaria showed that increased plasma CD23 and *P. falciparum* specific IgE levels may be involved in the severity of falciparum malaria, while the amount of TNF-alpha and specific IgG may correlate with protection against disease. Moreover,

P. falciparum haemozoin can induce B cell activation and specific IgG production via BAFF and APRIL pathways. In gnathostomiasis, the works concluded that the infective larval *G. spinigerum* excretory-secretory product might involve immune-evasion strategy by modulating human monocyte function via depletion of FcĐRI expression and induce apoptosis of human immune cells. For the work on non-infectious diseases, she studied inflammatory genes involved in developing coronary heart disease and found that increased Đ-defensin and mRNA expression in hyperlipidemia patients may be a risk factor for the development of the disease.

- In 2016, Dr. Urai Chaisri marked variations of interest in tropical diseases and expansion of collaborations in and outside the Faculty, such as Siriraj Hospital. Research work and papers published included leptospirosis, schistosomiasis, Ebola virus, and the pathology of thalassemic mice.

2016 SOCIAL IMPACT :

- One aspect of Dr. Sumate Ampawong's research was to evaluate the efficacy and toxicity of Thai natural products or supplements to patients with non-communicable diseases such as diabetes, hypercholesterolemia, and hypertension. "My research goal aims to alleviate non-communicable diseases by assessing the toxicity and efficacy of these products for candidate therapeutic approaches". His recent findings showed that these products are non-toxic in an animal model, and some herbs effectively reduced blood cholesterol levels and blood pressure in rats.
- Dr. Parnpen's study with the molecule S1P is currently in laboratory testing and is set to progress through animal testing to test its efficacy in restoring endothelial cells. "We will improve until we reach the clinical trials." This molecule can be one of the most effective adjuvant treatments for severe complications of *P. falciparum* malaria.

2016 FACTS AND FIGURES :

Number of publications	12	Number of oral presentations	-
Number of poster presentations	4	Number of academic staff	4
Number of support staff	5	Number of students	5

Tropical Pediatrics

Assoc. Prof.
Chukiat Sirivichayakul
– Head

“ The key focus areas of the Department of Tropical Pediatrics are vaccine evaluation and epidemiological research into numerous diseases, including dengue and influenza. ”

The key focus areas of the Department of Tropical Pediatrics are vaccine evaluation and epidemiological research into numerous diseases, including dengue and influenza. Much of its recent activity has been in the development of the world’s first licensed dengue vaccine.

2016 HIGHLIGHTS :

- An oral presentation was made at the 8th Asian Congress of Pediatric Infectious Diseases (ACPID 2016), during November 8-10 on the long term (6-year) follow-up in Thai children from a phase IIB proof-of-concept efficacy study of the CYD-TDV dengue vaccine.
- The Department collaborated in a publication on the safety and immunogenicity of a combined tetanus, diphtheria, recombinant acellular pertussis vaccine in healthy Thai adults, developed by BioNet-Asia. The Department conducted the observer-blind, randomized controlled trial in healthy adult volunteers aged 18–35 years.
- A long-term follow-up of Japanese encephalitis chimeric virus vaccine on immune responses in children showed that a single-dose of JE-CV as a booster following MBDV administration provided long-lasting immunity.

2016 SOCIAL IMPACT :

- The Department was involved in phase IIB of the Sanofi Pasteur dengue vaccine trial, the first licensed dengue vaccine, which involved tests on 4,000 children in Ratchaburi Province. The vaccine was licensed for use in Thailand in September 2016. Phase III of the trial revealed that the vaccine should only be used between the ages of 9 and 45 years and for those who have previously been infected.
- The Department is involved in a new vaccine trial that is being run by Takeda. The drug developer initiated a Phase III clinical trial, DEN301, in 9 countries across Latin America and Southeast Asia, including Thailand, in September 2016. DEN301 will enroll approximately 20,000 healthy children between the ages of 4 and 16 years living in dengue-endemic countries in Latin America and Asia.
- The Department is about to commence work on new anti-malarial drug development funded by GlaxoSmithKline.

FACTS AND FIGURES 2016 :

Number of publications	6	Number of oral presentations	1
Number of poster presentations	0	Number of academic staff	6
Number of support staff	11	Number of students	1

Centers of Excellence

"The Faculty has four Centers of Excellence – BIOPHICS, the Vaccine Trial Center, CEAR and the Center of Excellence for Malaria Research. This final center is divided into three sub-units – MVRU, GEM and CMRU. On the following pages there are more details about each center and unit, including their areas of focus and recent achievements."

Center of Excellence for Biomedical and Public Health Informatics (BIOPHICS)

Center of Excellence for Antibody Research (CEAR)

The Genomics and Evolutionary Medicine Unit (GEM)

Mahidol Vivax Research Unit (MVRU)

Clinical Malaria Research Unit (CMRU)

Vaccine Trial Centre (VTC)

Center of Excellence for Biomedical and Public Health Informatics (BIOPHICS)

Assoc. Prof.
Jaranit Kaewkungwal
– Head

“ BIOPHICS has several on-going clinical research projects with pharmaceutical companies, including Sanofi, Bionet, and the Thai Government Pharmaceutical Organization (GPO). ”

The organization started out as a data management unit that only handled clinical research. Funding from the Rockefeller Foundation in 2007 saw it transform into BIOPHICS, which now has a greater focus on informatics. From only 7 staff, the Center has expanded into a 33-member team. Currently, this Center of Excellence provides services in clinical data management, data analysis, and health informatics. It is a unique organization, now focusing mainly on academic support services. BIOPHICS also provides consulting services and training to public and private organizations in Thailand and beyond.

BIOPHICS works with hospitals and institutions in Southeast Asia, the UK, and the USA, in collaborative projects supported by national and international grant agencies. The Center is conducting several large-scale health-informatics initiatives with support from the Global Fund, World Health Organization (WHO), and the Armed Forces Research Institute of Medical Sciences (AFRIMS). Currently, BIOPHICS has several on-going clinical research projects with pharmaceutical companies, including Sanofi, Bionet, and the Thai Government Pharmaceutical Organization (GPO). The Center also works with Non-governmental Organizations (NGOs) and Not-for-profit Organizations on local and international health-related issues; for example, surveying HIV/AIDS patient treatment and care in South and Southeast Asian countries and studying the epidemiology of malaria patients in Thailand, Kenya, and Peru.

MAIN RESEARCH AREAS :

- Biostatistics
- Public health informatics
- Epidemiology
- Clinical data management
- Data analysis
- Training & consultation
- Health informatics
- Surveillance systems

2016 HIGHLIGHTS :

- BIOPHICS transferred the ownership of the National Electronic Malaria Information System (eMIS) to the Ministry of Public Health (MOPH). BIOPHICS produced the terms of management and development of the eMIS. After more than 5 years' development the MOPH now administers the System independently.
- The Center is starting to work with the Bureau of Tuberculosis to develop a TB surveillance system. This project is currently in the developmental phase.
- BIOPHICS has developed and implemented a veterinary informatics system for the Bureau of Disease Control and Veterinary Services, Department of Livestock Development to monitor pig farms in Chachoengsao and Chonburi.
- The Center completed data management and statistical reports on an influenza vaccine for the Government Pharmaceutical Organization (GPO), to permit licensure by the Thailand Food and Drug Administration. Other clinical trials for pharmaceutical companies were also completed for global submissions.

2016 SOCIAL IMPACT :

- Arranged a 5-day workshop on "*Data Visualization and Business Intelligence for Health Data*" held in June at the Vie Hotel, Bangkok. It was attended by 62 staff from hospitals across Thailand.
- Arranged a 2-day workshop on "*Good Clinical Practice (GCP) in Clinical Research*" and 3-day workshop on "*Statistical Issues and Analysis for Clinical Trials*" in July at the Vie Hotel, Bangkok. The two workshops were attended by 119 and 69 medical and healthcare persons from pharmaceutical companies, academic institutes, and hospitals, respectively.
- BIOPHICS continues to develop new approaches and novel methods to solve problems that the research field is currently facing. Services, such as surveillance system development and bioinformatics systems, perform efficiently in real-life settings. As Assoc. Prof. Jaranit states, "For the outcomes of our work, no matter whether they are clinical or informatics projects, they are all applied to actual use by stakeholders. We are really proud of our work because it benefits society".
- BIOPHICS focuses on public-health system development and clinical management. In addition, with its philosophy, the Center is "reaching and teaching" the people in private and public healthcare settings, particularly on research methodology, statistics, Geographical Information System (GIS), information technology, and database management. The Center maintains support to several pharmaceutical companies, by administering clinical research and providing assistance with data management, statistical analysis, and writing final reports.

Center of Excellence for Antibody Research (CEAR)

Assoc. Prof.
Pongrama Ramasoota
– Head

> **“ Since its founding in 2009, CEAR has now attracted 12 million Baht in research grants, collaborated further with Japanese and Thai companies ”**

CEAR focuses on the use of neutralizing human monoclonal antibodies (NhuMAbs) as therapeutic agents against a wide range of infectious diseases. The Center is equipped with state-of-the-art facilities, including apparatus necessary for biosensor, flow cytometry, viral culture, and real-time PCR.

In addition to Anti Envelope (E) NhuMAb, recently Dr. Pongrama and his team developed Anti-NS1 and FC modified NhuMAbs, so progressing their research. The Center's main goal is to transform these findings into a therapeutic form, and with their current progress, CEAR has moved closer to achieving its objective.

Since its founding in 2009, CEAR has now attracted 12 million Baht in research grants, collaborated further with Japanese and Thai companies, produced more products and obtained a number of patents. They also added another MSc staff member to the team.

MAIN RESEARCH AREAS :

- Dengue virus
- Influenza virus
- Foot and mouth disease virus
- Rabies virus, Parvo virus
- Anti-NS1 NhuMAb
- FC Modified NhuMAb

2016 HIGHLIGHTS :

- CEAR obtained candidate therapeutic antibodies (Anti-NS1 and FC Modified) and the Thailand Research Fund awarded them a 12 million Baht grant to conduct a toxicity and safety trial on cynomolgus monkeys. After this, they intend to move to clinical trial.
- Dr. Pongrama received several awards, including the Outstanding Inventor Award from the National Research Council of Thailand and the Outstanding Veterinarian from the Veterinary

Association of Thailand. He accepted the Outstanding Alumni and the Role Model Veterinarian awards from Kasetsart University.

2016 SOCIAL IMPACT :

- CEAR's newly discovered Anti-NS1 and FC modified NhuMabs help to reduce the severity of dengue infection and later eradicate it. Anti-NS1 fights the severe phase of NS1 such as high fever, low platelet, and plasma leakage, while FC modified antibody binds with human white blood cells (WBC) and neutralizes the virus. In addition to the existing Anti- Envelop (E), these antibodies are now therapeutic candidates and the Center has applied for patents.
- Produced their own product- *OxySafe GMP Air Spray*. This antimicrobial air spray was developed in collaboration with the Faculty of Science, Srinakharinwirot University and InterWisdom company. This product is now sold in the market and exported to neighboring countries.
- Dr. Pongrama was an Invited Speaker at the 8th Asian Congress of Pediatric Infectious Diseases (ACPID) 8-10 November 2016, speaking on the topic "Therapeutic human antibodies against 4 serotypes of dengue virus" and an Invited Speaker at the Joint International Tropical Medicine Meeting (JITMM) 7-9 December 2016, where his topic was "Therapeutic human antibodies against 4 serotypes of dengue virus". He also presented talks at several Universities in Thailand, including Chulalongkorn, Thammasat, and Kasetsart universities.
- CEAR has made remarkable achievements in the field, producing therapeutic and diagnostic tools for various infectious diseases. However, developing drugs for humans requires an extensive process and involves a high cost. Hence, finding a capital investment in the product is challenging. But with the Center's drive and support from the Thailand Research Fund, achieving this goal is within reach. As Dr. Pongrama said, "We will try to finish safety and toxicity testing as soon as possible, then move to clinical trials phase 1-3; then we can finally use these with humans."

Genomics and Evolutionary Medicine Unit (GEM)

Asst. Prof.
Thanat Chookajorn
– Head

“ Dr. Thanat Chookajorn received the 2017 TRF-OHEC-Scopus Researcher Award for his discovery of antimalarial resistance and fitness trade-off. ”

Understanding how drug resistance happened, rather than what happened, is the most important drive for Dr. Thanat Chookajorn, Head of Genomics and Evolutionary Medicine Unit (GEM).

With the application of evolution biology, GEM aims to address and find solutions to pressing issues in tropical medicine, such as drug resistance and virus evolution. The team seeks to understand the mechanism of drug resistance and develop a chemical compound that will combat drug resistance in malaria parasites.

The team is broadening their research focus, towards the production of drugs that will prevent resistance developing. “We didn’t plan to work on drug development *per se* but what happens is when we make new discoveries about drug resistance mechanism, it was very obvious that we can develop a drug that can target that mechanism. That is the reason we started working on drugs and it seems to be going well.” The team has been collaborating with GlaxoSmithKline (GSK) and NSTDA for drug development. In 2017, they hope to patent a drug screened in 2016. According to Dr. Thanat, they already have two drugs with good profiles, which can be implemented immediately.

The team is part of the Faculty’s new development program. Combining the strengths of GEM, BIOPHICS, the Department of Entomology, and the Hospital for Tropical Diseases, a plan to develop a surveillance system is currently in progress, in partnership with the Department of Livestock Development. The surveillance system will monitor the pathogens of exotic animals coming to Thailand, focusing on the western border area between Myanmar and Thailand.

It has been two years since GEM was established and the Unit is getting worldwide recognition for its contributions to biomedical research and tropical medicine.

MAIN RESEARCH AREAS :

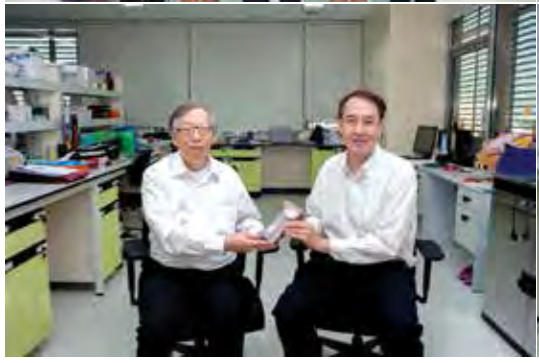
- Drug resistance
- Virus evolution
- Plasmodium malaria parasite
- Drug development

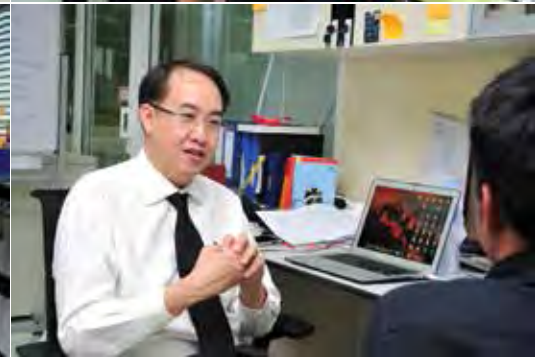
2016 HIGHLIGHTS :

- Dr. Thanat Chookajorn received the 2017 TRF-OHEC-Scopus Researcher Award for his discovery of antimalarial resistance and fitness trade-off. His team identified a mechanism underlying fitness loss and developed a drug that weakens that system. His work now covers antifolate, chloroquine, and artemisinin, shedding light on drug resistance of the three major drugs used in Thailand.
- GEM's post-doc, Ms. Krittikorn Kumpornsin was awarded a bursary to attend the Wellcome Trust Advanced Course on "Practical Aspects of Small Molecule Drug Discovery: At the Interface of Biology, Chemistry and Pharmacology", at the Wellcome Trust Genome Campus in Hinxton, South Cambridgeshire, UK, in 2017.
- Dr. Thanat Chookajorn was awarded a prestigious Newton Advanced Fellowship from The Royal Society.

2016 SOCIAL IMPACT :

- GEM determined three stages that target malaria resistance and developed a drug that controls this mechanism. They are working with GSK to push this drug to trial.
- The team investigated the malaria outbreak in Srisaket, Ubon Ratchathani, and Surin Province, in Eastern Thailand. They explored the area and engaged with local authorities to extend help. It was found that the reason for the outbreak was the development of drug-resistant parasites. The drug that the team is developing is ready to be tested and they plan to implement it in those provinces.





Mahidol Vivax Research Unit

Dr. Jetsumon Prachumsri
– Head

“ The Unit was awarded a grant from the Department of Defense, US Army, to study the impact of ivermectin, a drug normally used to treat helminth infections, in reducing/eradicating malaria. ”

The Mahidol Vivax Research Unit (MVRU) is the only laboratory in the world working continuously with the full cycle of the protozoal parasite *Plasmodium vivax*, one of the 5 species of malaria parasites that infect humans. Dr. Jetsumon Prachumsri utilizes this unique global position to elicit research questions that can be addressed by this laboratory. Numerous international research collaborations have been generated to further work on *P. vivax*. The multidisciplinary MVRU team consists of researchers with extensive experience and expertise in entomology, molecular biology, and cell biology. The Unit also collaborates with experts in vector biology. Currently, the Unit is seeking support from partner departments in the Faculty to strengthen its immunology capacity.

MVRU was established only 5 years ago, and has already showed practical improvements and significant contributions to the eradication of malaria, especially the understanding of the parasite *P. vivax* and related issues. The Unit started with 12 staff and two grants and has now expanded into 28 staff, and has attracted ten significant sponsored research grants.

Bill and Melinda Gates Foundation funding for the liver-stage consortium, which MVRU joined in 2013, will last until the end of 2017. MMV will continue to support the study of liver-stage *P. vivax* until new effective compounds are identified. With the Unit’s promising future, MVRU plans to expand its laboratory. As Dr. Jetsumon stated, “We plan to transform our Unit into an international collaborating center, if the Faculty and the University approve, and we may have a new name for your next annual review.”

MAIN RESEARCH AREAS:

- Malaria: biology of all developmental stages
- Transmission-blocking vaccine
- Drug efficacy against liver stages
- Sporozoite transcriptome and proteomic studies
- Acquired immunity
- Serological markers for malaria hotspot transmission

2016 HIGHLIGHTS :

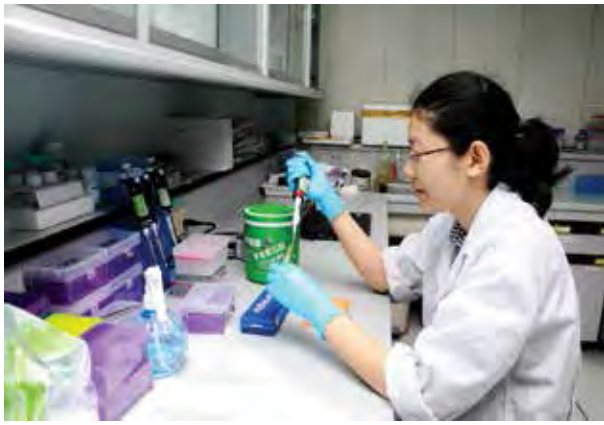
- More recently, the Unit was awarded a grant from the Department of Defense, US Army, to study the impact of ivermectin, a drug normally used to treat helminth infections, in reducing/

eradicating malaria. The idea of this project is to use this drug in a form that will reduce and prevent the transmission of malaria. They will evaluate its consequent impact on the population and if their hypothesis works, the outcome of this project would be malaria reduction and elimination.

- MVRU made huge progress in the use of an *in-vitro* system to screen new drugs for liver-stage *P. vivax*, enabling the screening of large amounts of compound.
- *P. vivax* demonstrates a preferential invasion response to young red blood cells (RBC). However, young RBC are not easily obtained from donors, and most blood cells from blood banks are already mature. Therefore, the Unit partnered with a Japanese company that can produce human RBC in larger volumes and different stages. This project has opened up new pathways to culturing blood-stage *P. vivax* successfully.
- Dr. Jetsumon was featured in a news article by Medicines for Malaria Venture (MMV), which highlights developments in *P. vivax* hypnozoite cell-based *in-vitro* assay, which can screen up to 1,000 compounds per year. An article in Trends in Parasitology recounts how Dr. Jetsumon developed into a researcher specializing in *P. vivax*. The feature article also focused on her being an established female researcher in the field.
- In collaboration with Dr. Liwang Cui, of Pennsylvania State University, the group successfully obtained support from the D43-Fogarty program, NIH, USA to train young researchers and graduate students on *P. vivax* research. Currently the program has provided funding to support 2 junior faculties, 2 postdoctoral fellows and 6 PhD students at the Faculty.

2016 SOCIAL IMPACT :

- MVRU's facilities in Tak and Kanchanaburi play an important role in the success of their projects. Recently, the Unit published work on



how the asymptomatic population contributes to malaria transmission in the area. By using molecular technology, they identified asymptomatic carriers, whose blood was fed to lab-raised mosquitoes. The mosquitoes were taken into the field to feed on the blood of the local population in a relay. Finally, they were brought back to determine whether the parasite can transfer to the mosquito. They found that, on average, 3-5% of this population transmitted the disease to the mosquito. This project will help the malaria-control program to set a proper strategies to deal with asymptomatic population.

- The Unit collaborated with Japan and Australia for a new surveillance tool that can survey a larger population–symptomatic and asymptomatic individuals. This new surveillance tool can provide faster results and is less complicated.
- Dr. Jetsumon served as an invited speaker in the Molecular Approaches in Malaria (MAM) 2016 Conference held in Lorne, Australia. She lectured in the Malaria Management session, while Dr. Wanlapa Roobsoong presented a poster presentation entitled "Field-based *in-vitro* invasion inhibition assay of *Plasmodium vivax*".

Clinical Malaria Research Unit (CMRU)

Prof.
Srivicha Krudsood
– Head

“ The Unit provides malaria consultancy services that inform and influence Thailand’s national malaria policy. ”

The CMRU has been in operation for three years. The Unit’s three researchers specialize in the clinical care of malaria patients, including severe malaria pathophysiology, hematology profiling, and exploring new combination therapies. Research is both hospital- and field-based. The major challenges it seeks to address are drug resistance, mortality rates, and improvements in patient care through early detection.

MAIN RESEARCH AREAS :

- Anti-malaria drug trials
- Clinical care
- Therapeutics
- Pathogenesis of severe malaria

2016 HIGHLIGHTS :

- Studies on glucose-6-phosphate dehydrogenase (G6PD) deficiency continued during the year, with the following of patients for 6 months having been completed, with progression to the data analysis stage to take place in 2017.

- The Unit collaborates with the University of Columbia, the Ministry of Public Health, and the National Center for Global Health and Medicine in Japan, and is seeking to increase its levels of international collaboration. The Unit is currently investigating malarial anemia, cerebral malaria, and neurological complications caused by malaria.

2016 SOCIAL IMPACT :

- The Unit ran the 14th International Training Course on Management of Malaria during 2016.
- The Unit provides malaria consultancy services that inform and influence Thailand's national malaria policy.

Vaccine Trial Center (VTC)

Prof.
Punnee Pitisuttithum
– Head

“ The VTC celebrated 30 years of operation in 2016. Part of the activities to recognize this important achievement was hosting the ThaiTect ”

The VTC is a clinical facility for testing newly developed vaccines. It was the first facility of its kind in both Thailand and the region and is still the only site outside of the USA to be able to run experimental human challenge studies. The VTC was established in 1984 and has been fully operational since 1986. The Center has many longstanding collaborators, including the Thai Ministry of Public Health (MoPH) and the US Armed Forces Research Institute of Medical Sciences (AFRIMS).

MAIN RESEARCH AREAS :

- HIV/AIDS
- Influenza
- HPV
- Dengue

2016 HIGHLIGHTS :

- The VTC celebrated 30 years of operation in 2016. Part of the activities to recognize this important achievement was hosting the ThaiTect (Thailand Towards Excellence in Clinical Trials) meeting. Over 300 people participated in the successful event, which aimed to promote coordination and cooperation among research clinics in Thailand and increase awareness of international standards. The feedback on the event was very positive and encouragingly more than 90% of participants said the organizer's message of how to attain excellence in clinical trials was clear.

- Punnee Pitisuttithum, with Alain Bouckenooghe of Sanofi Pasteur, published a well-received editorial in the Expert Review of Vaccines on the first licensed dengue vaccine. The editorial, which was read over 1400 times in the first seven months after publication, outlines the background of the vaccine, CYD-TDV, and the disease, as well as describing the fever surveillance structure that should be in place when the vaccine becomes licensed in a country. The article concluded that the vaccine's approval represents a major milestone in the prevention of dengue, but that it should be complementary to existing integrated intervention and education strategies.

- After several years of work by the four members of the VTC team plus colleagues from the Faculty, AFRIMS, and the Walter Reed Army Institute of Research (WRAIR), the results of their clinical trial of the *Shigella sonnei* vaccine candidate, WRSS1, were published. The trial was the first time the vaccine candidate had been tested somewhere *Shigella sonnei* is endemic. A 40% vaccine efficacy was calculated and it appeared that a single oral dose of WRSS1 at 10^4 CFU failed to achieve its full potential in a population in which the organism is endemic. This important finding focuses the direction of further trials with a higher dose and repeated immunizations.

- All planning and approval steps were completed for a longitudinal study among men who have sex with men and transgender women at risk for HIV-1 infection. The study, a collaboration with AFRIMS and the Royal Thai Army, will test the feasibility of the group as a cohort for HIV vaccine trials.

2016 SOCIAL IMPACT :

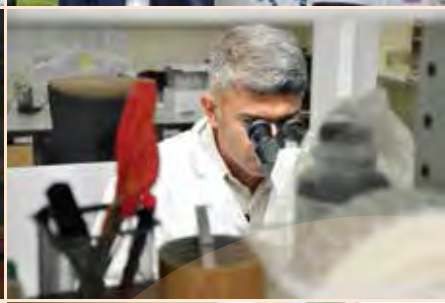
- The VTC ran phase I and II trials of the Thai Government Pharmaceutical Organization's inactivated seasonal influenza vaccine. The trials, funded by the WHO, tested the safety and immune response of the vaccine, which will now move to phase II/III, an important step towards licensing and building pharmaceutical capacity within Thailand.

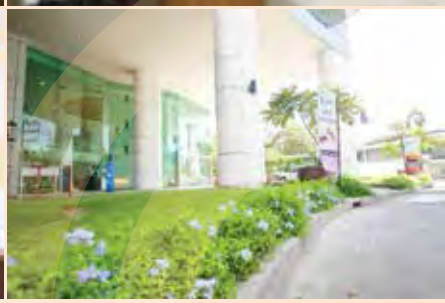
- The licensed dengue vaccine CYD-TDV (the Vaccine Trial Centre was part of the clinical test sites that help secure licensing), became available in over ten countries, giving millions of people the opportunity to protect themselves. For example, in the Philippines, CYD-TDV has been incorporated into public-health policy, and in 2016 alone more than 500,000 people received the vaccine.

- The VTC was involved in work that led to the H5N2 avian influenza live-attenuated vaccine being licensed in Thailand and Russia for emergency use, giving these countries a tool to use in the case of an outbreak. The vaccine has also been found to offer lifelong immunity, giving potential extra protection to those who take it.

- Punnee Pitisuttithum represented Thailand and the VTC at a meeting of the AIDS Vaccine for Asia Network. The Network is a coordinated effort to maintain interest and funding for developing an HIV vaccine in Asia.

Collaborations





“International academic collaboration is central to the work at the Faculty. There are currently seven international organizations or units hosted, across a range of research and activity areas. The following pages describe the work of each collaboration and their highlights and impacts in 2016.”

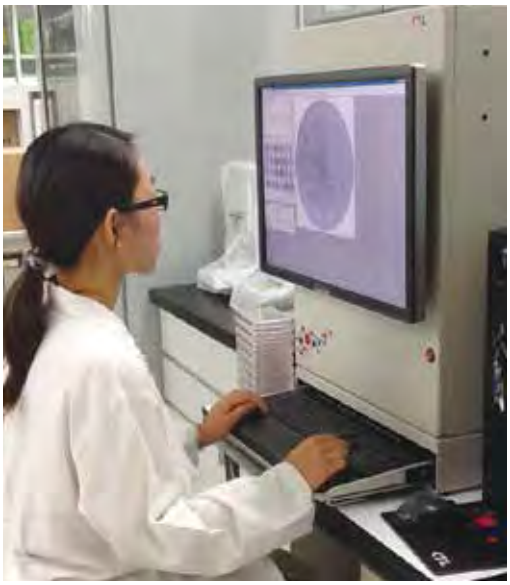
BIKEN Endowed Department of Dengue Vaccine Development

> "BIKEN, together with the Faculty of Tropical Medicine, submitted a joint patent application"

Dr. Eiji Konishi
– Head

Dr. Eiji Konishi acknowledges dengue as a global concern, but no vaccine with high efficacy is available. This is for him the biggest challenge in the field of dengue vaccine development. To address the issues in the field, the BIKEN Endowed Department of Dengue Vaccine Development is striving continuously to develop a more effective dengue vaccine.

The team's commitment is to provide novel insights into improving dengue vaccines. BIKEN has also sustained international collaboration through training graduate and post-graduate students from Thailand and other countries.



The BIKEN Endowed Department of Dengue Vaccine Development is a joint collaboration between the Research Institute for Microbial Diseases, Osaka University, and the Faculty of Tropical Medicine, Mahidol University. The research-focused collaboration is now on its final year and will close at the end of March 2017, finishing their 6-year contract. On this occasion, the staff of BIKEN would like to extend their gratitude to all the staff of the Faculty, especially to the former and current Deans.

MAIN RESEARCH AREAS :

- Dengue
- Vaccine Development

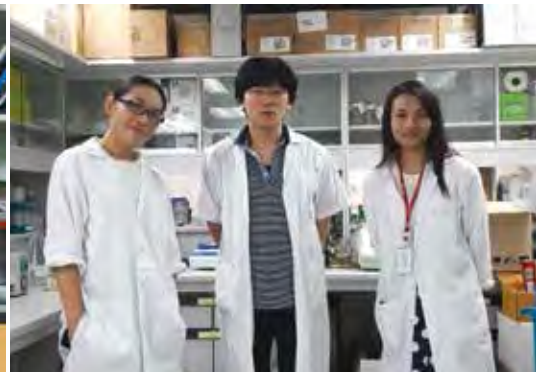
2016 HIGHLIGHTS :

- In 2016, BIKEN, together with the Faculty of Tropical Medicine, submitted a joint patent application that describes an approach to reducing enhancing antibody induction and increasing protective efficacy of dengue vaccines.

2016 SOCIAL IMPACT :

- The patent BIKEN have applied for describes an approach to reducing enhancing antibody induction and increasing protective efficacy of dengue vaccines.

- BIKEN is working on a new study. Researcher Dr. Atsushi Yamanaka, said they are still conducting animal experiments using mice,



where they get more results to support their new insights. "We have a new insight. But to support this new insight we are trying to get more results with mice. Right now our vaccine strategy is DNA vaccine." DNA vaccination is a method to produce an antigen that will have a protective immunological response.

- If Dr. Yamanaka can achieve positive results with mice, he will experiment with another animal model. They will progress to the clinical stage if the outcomes of the different animal models are promising.

- When the study is finished and successful, Dr. Yamanaka plans to provide the information to a vaccine company. "If this company will take the patent, of course, we will be happy. Also, this is for the people, the health of the people." he said.

- The closing of the 6-year partnership between BIKEN and the Faculty will not end their mission of developing vaccine efficacy. As Dr. Yamanaka stated, "Osaka University is still in collaboration with MOCID. I hope someone will succeed with this kind of study in MOCID. I will finish my research at the end of March. After that, I will collect the data, then write a paper. I will continue my work."

Mahidol-Osaka Center of Infectious Diseases (MOCID)

“ MOCID generated monoclonal antibodies which react equally with all three genotypes of Chikungunya virus. ”

Dr. Tatsuo Shioda
– Director

It has been one year since Dr. Tatsuo Shioda was appointed as the Director of Mahidol-Osaka Center of Infectious Diseases (MOCID) and the efforts to improve diagnostic tools and develop therapeutics for dengue and chikungunya continue. “Our diagnostic strategy always correlates looking at virus protein. Of course, viral diseases can be diagnosed by the presence of viral protein or presence of antibodies against viral protein. But we are aiming to develop therapeutic measures”, Dr. Shioda explains.

Dr. Shioda has been working to develop a diagnostic tool for chikungunya virus MOCID has produced three years ago. As he tells, “I was working in India using such a kit. It has very good sensitivity for the East Central South African (ECSA) type of virus, but the weak point is its significantly reduced sensitivity for Asian viruses. Therefore, we wanted to include the spectrum in a diagnostic tool to form a diagnosis.”

MOCID maintained its collaboration with Dr. Pongrama Ramasoota and Dr. Pornsawan Leaungwutiwong on the development of diagnostic and therapeutic measures for dengue and chikungunya. Also, the partnership with Dr. Weerapong Phumratanapraoin on the identification of viral and host factors for the prediction of dengue hemorrhagic fever remained.

There have been changes in staff as Dr. Orapim Puiprom has left MOCID but two additional staff, Ms. Juthamas Padungsombat and Ms. Narinee Srimark, have joined MOCID.

MAIN RESEARCH AREAS :

- Dengue
- Chikungunya
- Diagnostics
- Therapeutics

2016 HIGHLIGHTS :

- MOCID generated monoclonal antibodies which react equally with all three genotypes of Chikungunya virus. These are the ECSA, Asian, and West African (WA) genotypes.

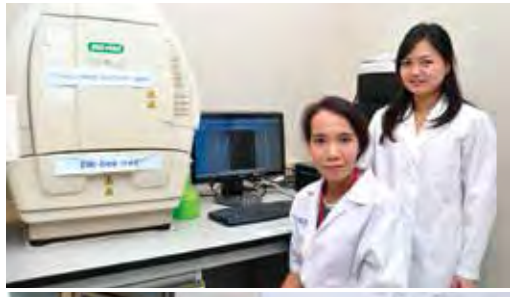
- One researcher, Aekkachai Tuekprakhon, received a DEAN/MOCID/BIKEN Academic Scholarship 2016.

2016 SOCIAL IMPACT :

- Evaluated chikungunya rapid diagnostic kits in Indian and Caribbean specimens. This will provide precise diagnosis and immediate proper treatment.

- MOCID's diagnostic kit for chikungunya received positive feedback in India, opening the possibility for it to be finally commercially available. As Dr. Shioda stated, "At the moment, India has a huge outbreak of chikungunya. I am not sure about India's approval system, but I hope it would be very easy to get the pharmaceutical to sell, since it is a need."

- MOCID is collaborating with RIKEN, the largest research institute in Japan. RIKEN has structural biologists and among their expertise is solving the three-dimensional structure of protein. Together, they are working to be able to take up inhibitors, which can suppress all four dengue serotypes.



Mahidol Oxford Tropical Medicine Research Unit (MORU)

“ The overseas Programme was established within the Faculty in 1979. The unit has grown significantly in the past 15 years, and currently has 169 academic staff, 46 support staff, and numerous study sites based around the region and beyond. ”

Prof. Dr. Nicholas Day – Director

The Faculty of Tropical Medicine's largest international collaboration, the Mahidol Oxford Tropical Medicine Research Unit (MORU), hosts the Wellcome Trust's Thailand Major Overseas Programme and was established within the Faculty in 1979. The unit has grown significantly in the past 15 years, and currently has 169 academic staff, 46 support staff, and numerous study sites based around the region and beyond. Its core aim is to improve health and reduce the human disease burden in the developing world by providing effective and practical means of diagnosing and treating tropical infections. The epidemiology, diagnosis, pathophysiology and treatment of malaria accounts for roughly half of MORU's research. It also conducts research in other areas, including melioidosis, dengue, scrub typhus and other rickettsial infections, TB, leptospirosis, and multidrug-resistant bacterial infections.

Photo Credit: David Maurice Smith for Wellcome Trust

MAIN RESEARCH AREAS :

- Malaria
- Dengue
- Other rikettsial infections
- TB
- Multidrug-resistant bacterial infections
- Melioidosis
- Scrub typhus
- Leptospirosis

2016 HIGHLIGHTS :

- Professor Sir Nicholas White, Professor of Tropical Medicine at Oxford and Mahidol University and Chairman of MORU, was appointed a Knight Commander of the Order of St Michael and St George for services to tropical medicine and global health.
- Associate Professor Mallika Imwong, Head of MORU's Molecular Malaria Laboratory, was awarded the prestigious Outstanding Technologist Award at the ASEAN STI Forum in Bangkok.
- Head of Bioethics and Engagement, Phaik Yeong Cheah, was awarded the Thomson Reuters Thailand Frontier Researcher Award in the field of Social Science.
- Assistant Professor Direk Limmathurotsakul, Head of MORU Microbiology, was awarded the Thailand Author Award 2016 and the NRCT Research Award 2015-2016.

2016 SOCIAL IMPACT :

- The DFID-funded Tracking Resistance to Artemisinin II (TRAC II) project, which is

investigating the use of triple artemisinin combination therapies in study sites in Thailand, Laos, Cambodia, Vietnam, Myanmar, Bangladesh, India and the Democratic Republic of the Congo, began recruiting study subjects and completed establishment of the final 6 sites of the total 17 sites during the year. Prior to the final sites being opened during the 2016 malaria season, preliminary project results were presented at the Investigators Meeting in Bangkok, which included good drug combination efficacy and tolerance. The project's aim is to recruit 2040 study subjects across the eight countries.

- MORU's mathematical modelers successfully used computer simulations to identify the vaccines most likely to be effective against respiratory syncytial virus (RSV), the most common cause of infant severe pneumonia worldwide. The study examined which properties RSV vaccines under development would need to have to be most effective in preventing RSV in young children. Collaborating researchers were linked by a new network of mathematical modelers based in the Tropics (TDMODNET).
- An article on the molecular epidemiology of pathogens associated with community-acquired sepsis and severe sepsis appeared in The Lancet, and highlighted the need for inexpensive, multi-disease rapid diagnostic tests.
- MORU broadened its work on antimicrobial resistance, with a study published in eLife Sciences Publications reporting that multidrug-resistant bacterial infections cause more than 19,000 excess deaths a year in Thailand, compared to the 23,000 deaths a year estimated in the much more populous USA and 25,000 in the European Union.
- Science cafes commenced in Bangkok, Vientiane, and Siem Reap, held in non-academic venues such as cafés, bars and theatres. Café Scientifique aims to make science more accessible to the public and to help scientists communicate more effectively about their work.

Photo Credit: David Maurice Smith for Wellcome Trust

- The Village Drama Against Malaria initiative was held in 20 Cambodian villages from June to September 2016, supported by the Wellcome Trust's Public Engagement Fund. A two-day workshop was held at village schools, with young people learning to tell stories about malaria through drama. The third day involved performances with music, karaoke, short health talks, games, and drama, with all villagers and local authorities being invited. An article on the initiative appeared in The Lancet in December.
- A paper published in The Lancet urged health authorities to replace quinine with artemisinins in the first trimester of pregnancy to ensure optimal treatment of falciparum malaria in pregnant women, adding to the body of evidence that artemisinins do not cause adverse effects in pregnancy.
- A paper published in Clinical Infectious Disease Journal reported that the rapid decline in artemisinin effectiveness on the Thailand-Myanmar border is linked to the increasing prevalence of mutations in specific regions of the malaria parasite's kelch gene.
- MORU researchers collaborated with Pontificia Universidad Católica and Universidad del Desarrollo in Chile, publishing an article in the New England Journal of Medicine showing that scrub typhus, a major cause of illness and death in rural areas in the Asia-Pacific region, is also endemic in some parts of South America.

Malaria Consortium Asia

“ Malaria Consortium provided technical assistance and capacity development to establish improved surveillance and a data management system in Cambodia and Myanmar. ”

Dr. Siddhi Aryal – Asia Director

Malaria Consortium’s Regional Office in Asia is located within the Faculty and targets key regional health burdens, including malaria, pneumonia, dengue and neglected tropical diseases, focusing particularly on the health challenges faced by vulnerable populations in Asia. The organization’s presence has expanded in the region to a total of 6 offices in 3 countries–Thailand, Cambodia (Phnom Penh, Ratanakiri, Pailin), and Myanmar.

Malaria Consortium works with communities, health systems, government and non-government agencies, academic, institutions and local and international organizations, to ensure sustainable impact and good evidence-based delivery of services. It assists national programs and partners to design and carry out cutting-edge implementation research, develops and updates a comprehensive base of evidence on the region’s disease burden, drug use, improvement of health access and quality of care, and identifies and helps to support the elimination of relevant drug-resistant organisms and insecticide-resistant vectors by providing technical assistance and consulting services.

MAIN RESEARCH AREAS :

- Malaria
- Dengue

2016 HIGHLIGHTS :

- Malaria Consortium worked closely with Dr. Jetsumon Prachumsri in the Mahidol Vivax Research Unit (MVRU) during 2016, to implement a regional program funded by WHO/TDR in Thailand and Vietnam. Several publications will be disseminated following its completion in 2017.
- “Implementing integrated vector management for dengue control”, based on work with guppies (fish) in Cambodia, was chosen as the winner of the Break Dengue Community Action Prize, selected from 67 entrants.
- Malaria Consortium organized a successful second international symposium on malaria in Bangkok, bringing together more than a hundred individuals from academia, government, private sector and NGO partners from across the Greater Mekong and beyond.

- Jeffrey Hii, Sr. Vector Control Specialist, conceptualized and co-organized the APMEN Vector Control Working Group: Entomology and Vector Control for Malaria Elimination Regional Meeting & Workshop, held in Bangkok on 9-10 November 2016.

2016 SOCIAL IMPACT :

- Malaria Consortium provided technical assistance and capacity development to establish improved surveillance and a data management system in Cambodia and Myanmar. Surveillance TA and MIS research results in Myanmar were used for organizing information and changing the way data is used for decision making, and assisted the Thai government with national malaria surveys.
- A WHO-funded Residual Malaria Transmission project, running from December 15 to Feb 17, analyzed the magnitude and causes of RMT using multiple approaches including GPS tracking of forest-goers and mobile groups.
- The Cambodia office successfully mapped patterns of insecticide resistance for Aedes aegypti for deltamethrin, permethrin and temephos, and completed a cluster randomized trial on vector control tools targeting Aedes.
- In Cambodia, Malaria Consortium's research on dengue and surveillance TA assisted with harmonizing national program information and improved the effectiveness of interventions. In Thailand, research on knowledge, attitude and behavior as well as M&E formed part of re-design of national intervention planning in the 2018-2020 period Global Fund supported malaria program.
- In Bangladesh, following research and training at the Chittagong Hill Tracts, national malaria program volunteers and national maternal child volunteers joined forces to pilot joint implementation of community case management.

Silom Community Clinic @TropMed

“ SCC was selected to participate in a global large-scale clinical trial evaluating an injectable form of HIV pre-exposure prophylaxis (PrEP) called cabotegravir. ”

Dr. Eileen Dunne – Director

Founded in 2005 as a partnership between the Thailand Ministry of Public Health and the U.S. Centers for Disease Control and Prevention (TUC), Silom Community Clinic (SCC) moved to the Faculty in 2013. SSC is located on the 12th floor of the Hospital for Tropical Diseases. From the outset, the SCC was created as an LGBTQI-friendly sexual health clinic for men who have sex with men (MSM) and transgender women (TGW).

Silom Community Clinic, now called Silom Community Clinic @TropMed, integrates research with the provision of services and has been involved in many important research studies, including the 5-year Bangkok MSM Cohort Study and a recent clinical trial assessing the adherence, coverage and behaviors associated with non-daily pre-exposure prophylaxis (PrEP) to prevent HIV infection (HPTN 067). To learn about the research at SCC @ TropMed please see page XX.

SCC initiates and participates in a wide range of outreach activities. These include the Multiple-sexuality person Community Advisory Board (M-CAB) which has 30 members representing government agencies, private businesses, community-based organizations, medical research institutes and public media in Thailand. SCC also partners with key community-based organizations to introduce, communicate and disseminate HIV prevention and research information. Examples include working with the Rainbow Sky Association of Thailand (RSAT) and Service Workers IN Group (SWING) who provide support to male and female sex workers.

MAIN RESEARCH AREAS :

- HIV epidemiology and diagnosis
- Sexually transmitted infections (STI) epidemiology and diagnosis
- HIV Prevention Clinical trials
- HIV Prevention interventions for MSM and TGW

2016 HIGHLIGHTS :

- SCC was selected to participate in a global large-scale clinical trial evaluating an injectable form of HIV pre-exposure prophylaxis (PrEP) called cabotegravir. The trial will compare cabotegravir to the current oral form of PrEP. The study, which will start enrolling in 2017, includes 42 different research sites around the world. SCC @TropMed as well as two other Thai clinical research sites are also involved in the study, Chiang Mai University Research

Institute for Health Sciences (CMU-RIHES) and the Thai Red Cross AIDS Research Centre.

- 2016 was a year of awards for SCC @TropMed. Awards received by teams and individual staff include: the study team working with the Microbicide Trials Network winning the network's annual award and the Group Eagle Award from the U.S. Embassy; Dr. Sarika Pattanasin receiving an Honor Award for Outstanding Scientific Leadership and Staff Mentoring; and Ms. Sirirat Lertpruek receiving a Customer Service Award for her work on the Enhanced Gonoccocal Antimicrobial Surveillance Program.
- SCC was directly involved in the 25th Anniversary HIV Forum that marked 25 years of collaboration between the Thai MOPH and the U.S. CDC programs on HIV and STI prevention research, treatment and public-health interventions. Over one hundred participants attended the one-day forum which combined an internationally-recognized plenary speaker, MOPH and TUC speakers, roundtable discussions, and poster displays.
- The Bangkok MSM Cohort Study (BMCS) successfully concluded in 2016. The 5-year study enrolled 1744 participants and was the first description of HIV incidence and risk factors for MSM in Bangkok. The BMCS demonstrated young men ages 18-24 years were at particularly high risk for HIV.

2016 SOCIAL IMPACT :

- SCC @TropMed shared research findings with the Ministry of Public Health and helped outline areas for implementation research for new prevention activities. One key finding was the very high HIV incidence among persons aged 18-24 years. SCC @TropMed is now working with the MOPH on a new study that will specifically track HIV and STIs among young MSM and TGW ages 15-29 years in order to describe the epidemic and identify effective strategies for HIV prevention.
- The clinic provided direct healthcare benefits to many people. There were 1,686 new clients in 2016. Since opening in 2005 clinic has taken care of over 13,000 clients.
- Given the continued high HIV incidence in the clinic population, since March 2016, SCC @ TropMed has provided oral PrEP prescriptions to any interested client coming to the clinic for HIV testing. When taken consistently, PrEP can reduce the risk of HIV by more than 90%. From March to December 2016, PrEP was prescribed to 95 clients.
- During the year, SCC mentored several students, including a fellow of the Thailand MOPH Field Epidemiology Training Programme.

WorldWide Antimalarial Resistance Network (WWARN)

“One of WWARN’s key activities is to provide support for harmonized protocol design and data and sample collection, to promote high-quality research and facilitate comparative and pooled analyses across studies.”

Dr. Mehul Dhorda
– Head

The WorldWide Antimalarial Resistance Network (WWARN) is the malaria-focused branch of the Infectious Diseases Data Observatory (IDDO) run by the University of Oxford’s Centre for Tropical Medicine and Global Health. It brings together members of the global research and humanitarian infectious-disease community to collaborate in the generation, analysis, and application of data to improve patient outcomes. Its vision is the effective treatment and control of infectious diseases affecting the most vulnerable populations.

WWARN offers malaria researchers a space for collaboration and the sharing of information about clinical trials and the efficacy of antimalarial drugs, enabling researchers to identify trends or sub-population effects with greater certainty through pooled analyses of individual participant data from multiple clinical trials.

One of WWARN’s key activities is to provide support for harmonized protocol design and data and sample collection, to promote high-quality research and facilitate comparative and pooled analyses across studies. WWARN’s External Quality Assurance (EQA) Programme, based in the Faculty of Tropical Medicine, collaborates with over 100 laboratories in more than 35 countries. As part of the EQA Programme, WWARN operates a proficiency testing scheme across six continents, whereby labs are given blinded samples, report their findings and are given feedback to help them ensure proficiency. A complementary reference material scheme further supports standardization by providing accurately measured materials for use in validation experiments or as calibrators. The EQA team is actively engaged in quality assurance of research malaria microscopy and specimen collection, processing and testing by providing training and quality control.

2016 HIGHLIGHTS :

- WWARN researchers worked in close partnership with the Clinical Data Interchange Standards Consortium (CDISC) and experts across the malaria community to produce the first Malaria Therapeutic Area User Guide (TAUG-malaria) and updated case record form (CRF). This standard aims to reduce the heterogeneity of data collected by malaria researchers and drug developers.

- The WWARN Pharmacology Proficiency Testing (PT) programme received official Proficiency Testing Provider accreditation ISO 17043:2010. This ISO accreditation provides the programme with independent verification of the high standard of quality assurance measures implemented to provide proficiency test samples for 13 antimalarial drugs and metabolites.

- WWARN partnered with the Malaria in Pregnancy (MiP) Consortium to establish a malaria-in-pregnancy research programme within the WWARN data platform. This new scientific group will develop a better understanding of the impact of resistance on the effectiveness of current prevention strategies, and help ensure that all pregnant women with malaria receive safe and effective malaria treatment.

- The Infectious Diseases Data Observatory (IDDO) Asia Regional Centre is one of the partners in a new project funded by the French Government 5% Initiative and is led by the Department of Molecular Tropical Medicine of the Faculty of Tropical Medicine. The project aims to gather up to 10,000 samples to provide critical information on the prevalence and distribution of molecular markers of artemisinin-based combination therapy (ACT) drug resistance, including *pfmdr1* and *pf-plasmepsin-II*. These results are being made freely available to researchers, policy makers and public health officials in near real-time through regularly updated maps. *In-vitro* phenotyping of up to 200, or more, isolates collected from across the region will also be performed to assess parasite susceptibility to antimalarials and to monitor for emerging resistance due to known, or as yet uncharacterized or candidate, genetic markers.

2016 SOCIAL IMPACT :

- IDDO is taking a leading role in driving discussions to promote the equitable sharing of individual-level patient data from clinical trials or epidemiological surveillance to improve public health. IDDO led a workshop at the 2016 Geneva Health Forum, which brought together representatives from academia, industry, global health organizations, non-governmental organizations, funders and medical publishers, to examine the premise that data sharing is good for health. By unravelling the evidence behind the concerns around data sharing, the workshop participants sought to determine what is needed to make data sharing more effective.

- IDDO's collaborative work produced 15 peer-reviewed publications in 2016, many of which included public health recommendations.

Southeast Asian Ministers of Education Organization (SEAMEO) Tropical Medicine and Public Health (TROPMED) Network

“ This year marked the 50th anniversary of the founding of the Network. ”

Assoc. Prof. Dr. Pratap Singhasivanon
- Secretary General/Coordinator
SEAMEO TROPMED Network

The year 2016 is an important milestone in the history of SEAMEO TROPMED Network. This year marked the 50th anniversary of the founding of the Network. The Network was approved by the South East Asian Ministers of Education Council (SEAMEC) at its Second Meeting in Manila in November 1966, during which there was general recognition among the Southeast Asian Ministers of Education that **“a healthy economy needs a healthy community”**. For this reason, it was decided that steps should be taken at the regional level to solve health problems through regional cooperation.

2016 HIGHLIGHTS :

- An Alumni Forum organized with Deutscher Akademischer Austauschdienst (DAAD) German Academic Exchange Service in Bangkok, Thailand.
- Traditional Medicine and Health Professional Education Forum organized with Asian China Centre during the 9th China-ASEAN Education Cooperation Week in Guizhou Province, P.R. China.
- A discussion forum entitled “Promoting Harmonization and Mobility in Higher Education Focusing on Health Professions in SEA” was organized with SEAMEO Secretariat in Bangkok, Thailand.
- Arranged Regional Training Course on “Quantitative and Qualitative Methods in Designing Development Evaluation” in Bangkok, Thailand.
- The culminating activity was a Symposium with the theme **“Achievements and Challenges for Sustainable Development in Health”**. It was joined by past and present SEAMEO TROPMED Network officials, TROPMED Regional Centres, Development Partners, scholars and alumni, SEAMEO Centres, South East Asian Ministers of Education Secretariat (SEAMES) officials and staff, and members of the Diplomatic community.

Research Areas

> The Faculty's departments, centers, and collaborations cover a wide range of Tropical Medicine research areas. The following pages give background information on the diseases and other areas of research covered by the Faculty as well looking at the recent publications.

Dengue

Departments and Centers involved: Clinical Tropical Medicine, Medical Entomology, Hospital for Tropical Diseases, Microbiology and Immunology, Tropical Pediatrics, CEAR, and the Vaccine Trial Center

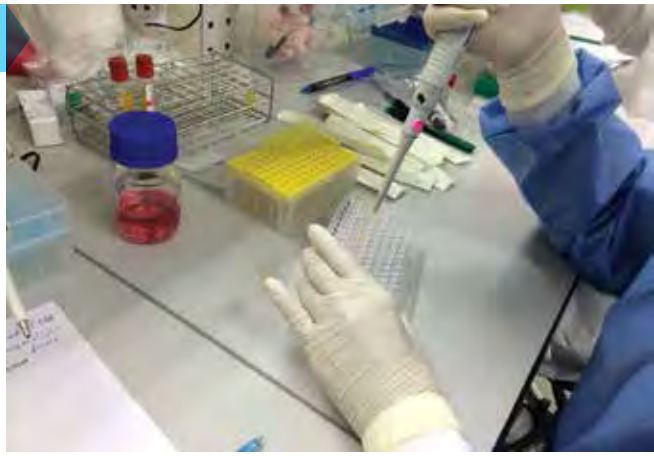
Collaborations: BIKEN, MORU and MOCID

BACKGROUND

The dengue virus (DENV) is transmitted by mosquitoes of the *Aedes* genus. Dengue is a Flavivirus, a group that also includes viruses responsible for yellow fever, Japanese encephalitis, and Zika virus infections. The dengue virus is divided into four major strains or "serotypes". Infection with one serotype provides life-long immunity to that specific serotype, but does not protect against the other three; in fact, subsequent infection with a different serotype is a significant risk factor for more serious disease. There is no specific treatment for dengue fever, but a vaccine has recently become available.

DISEASE IMPACT

DENV is the most significant disease-causing mosquito-borne virus in tropical and subtropical regions of the world today. It usually causes harsh flu-like symptoms and occasionally can develop into a potentially lethal complication called severe dengue (including dengue hemorrhagic fever and expanded dengue syndrome). In recent decades, the rates of dengue infection have increased rapidly and the WHO estimates that about half of the world's population is now at risk. The US CDC estimates that almost 400million infections occur annually worldwide. Thailand recorded nearly 40,000 cases of infection and five deaths in 2016.



KEY WORK AT THE FACULTY

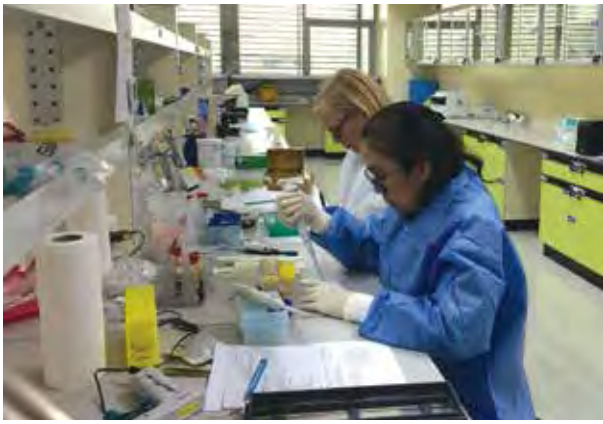
Faculty researchers played a key role in the testing of Dengvaxia® (CYD-TDV), the live recombinant tetravalent dengue vaccine, developed by Sanofi Pasteur. The trials found the vaccine to be safe and showed an overall 81% reduction in the risk of severe dengue infection. The vaccine is now available in over ten countries, giving public health professionals a valuable tool to combat dengue.

In an interesting example of leveraging large-scale clinical trials to study a range of diseases, the departments of Clinical Tropical Medicine and Tropical Hygiene took advantage of RV 144, the large Thai community-based HIV vaccine efficacy trial, to test the accuracy of clinically diagnosed dengue episodes reported as serious. Their work study demonstrated that dengue can be clinically diagnosed in adults in Thailand.

RECENT WORK

The Faculty and its collaborators published widely on DENV and severe dengue in 2016. A few key papers are highlighted below.

- Researchers from the Department of Microbiology and Immunology and MORU, working with international colleagues, were able to show, for the first time, that dengue viral RNA can be extracted from dengue rapid diagnostic tests and then submitted to real-time RT-PCR for serotyping. This finding is significant, as rapid diagnostic tests do not require cold storage, so may provide a new approach to the collection of epidemiological data from previously inaccessible tropical areas. The method can be used for dengue serotyping, to aid surveillance and inform public-health interventions.
- Several ESCRT (endosomal sorting complex required for transport) proteins that are recruited to sites of virus replication on the endoplasmic reticulum were identified by Eiji Konishi from BIKEN and colleagues from Japanese universities. Flaviviruses like DENV cause endoplasmic reticulum membrane rearrangements that create areas for replication of the viral genome and the assembly of viral particles. The study found that the release of both DENV and Japanese encephalitis virus was dramatically decreased by single depletion of TSG101 or a co-depletion of specific combinations of ESCRT-III proteins.
- Punnee Pitisuttithum and Usa Thisyakorn were part of the study group that provided data for a paper that looked at dengue in children in ten Southeast Asia and Latin American countries where the disease is endemic. The investigation found that in both regions the burdens of dengue were substantial. Although burdens varied country to country, the rates were generally higher in Asian countries and the disease was also found to be more frequently severe in Asian countries than in Latin American countries.
- The same study group data was used to assess the efficacy of the recently approved CYD-TDV dengue vaccine against asymptomatic dengue-virus infection in children and adolescents. Using the data, researchers from Sanofi Pasteur found the vaccine's efficacy against asymptomatic infection to be 33.5% (95% confidence interval, 17.9%–46.1%). The authors concluded that this observed vaccine efficacy against asymptomatic infection would translate into reduced DENV transmission in dengue-endemic areas if enough individuals were vaccinated.
- Acute liver failure is an atypical manifestation of dengue, but carries high mortality. A study by Faculty researchers, along with a colleague from Chulalongkorn University, found that various baseline risk factors are associated with acute liver failure in patients with dengue. The study found that although the incidence of acute liver failure in patients with dengue was low, its impact on morbidity, mortality, and poor clinical outcomes was significant. The study found age < 40 years, a > 10% ratio of atypical lymphocytes, and a platelet count < 50,000 mm^3 were all associated with the development of acute liver failure in dengue patients.
- A team from the Department of Tropical Pediatrics, working with researchers from Sanofi Pasteur, published a paper comparing virologically confirmed and serologically diagnosed dengue during surveillance following dengue vaccination. The study analyzed secondary data from the clinical trial assessing the efficacy of a tetravalent dengue vaccine.



They found serological diagnosis, using IgM and IgG ELISA, had good sensitivity (97.1%), but low specificity (85.1%) compared to virological confirmation by either serotype-specific RT-PCRs or by NS1-antigen ELISA. The authors concluded that reliance on serological diagnoses could lead to a significant number of false positives during surveillance following the introduction of the dengue vaccine and also during routine clinical practice.

- Natthanej Luplertlop, from the Department of Microbiology and Immunology, working with colleagues from Mahidol and other institutes, published results on a study that showed protein kinase C (PKC) may function as a restricting mechanism that controls the replication of DENV and represses the viral outburst in host cells. *In-silico* analyses indicated that the non-structural protein conserved phosphorylation sites for PKC. PKC inhibition increased viral replication and reduced the viability of DENV-infected cells.
- A non-mouse-adapted low-passage DENV-3 clinical isolate, DV3P12/08, was reported by Kriengsak Limkittikul, from the Department of Tropical Pediatrics, and his collaborating Japanese researchers. This step forward will help understand the pathogenesis of severe dengue, which is currently unknown, in part due to the lack of suitable animal models. The isolate was derived from recently infected patients and caused a lethal systemic infection in mice lacking Type I and II interferon receptors.

Helminths

Being among the neglected tropical diseases (NTDs), helminthiases remain a problem in tropical areas, especially rural areas, and to a lesser extent urban areas. It is also now becoming a threat in travel medicine. Travelers from different countries can carry diseases to countries that have not had these infections before.

The Department of Helminthology is the lead department in the Faculty of Tropical Medicine in investigating helminthic infections and is carrying out research across a number of fields, including diagnosis, therapeutics, epidemiology, and the systematic taxonomy of both parasite and host.

DIAGNOSTICS AND ALTERNATIVE HELMINTH THERAPY

Using molecular techniques, Asst. Prof. Poom Adisakwattana seeks to identify the proteins secreted from parasites, which can be used as a diagnostic tool. Presently, they use immunological methods for diagnosis. Proteomics analysis is utilized by transferring the protein of the parasite onto the membrane and use a serum from the patient. If that serum interacts with the protein of the parasite, it is confirmation that the patient is infected with helminths. They collaborate with Asst. Prof. Onrapak Reamtong of the Department of Molecular and Tropical Medicine and Genetics for proteomics and mass spectrometry technology. To date, they have identified interesting proteins ready for validation.

Alongside this research, Dr. Poom also probes the benefits and advantages of helminths. Alternative helminth therapy is identifying the proteins of molecules secreted by the parasite that can suppress or inhibit the host's immune response. These

Asst. Prof. Poom Adisakwattana

proteins can be used as a novel treatment for some diseases such as allergies and Crohn's disease, which are caused by the immune response. They have identified some proteins that require further assessment, to ensure their efficacy and transform them into a drug in the future. One example is the molecular characterization of serine protease inhibitor isoform 3, SmSPI, from *Schistosoma mansoni*. Serine protease inhibitor isoform protein is well-known for inhibition of the host immune response and they evaluate its importance for suppressing host immunity.

Dr. Poom's ultimate research goal is to understand the whole parasite interaction and discover the mechanism by which helminths in our body modulate our immune response. By achieving this, we may be able to prevent other immune disorders and immunological diseases in the future.

POPULATION GENETICS

Asst. Prof. Urusa Thaenkham's studies aim to classify species by differentiating genetics in between populations. The study on genetic differences among *Haplorchis taichui* populations in Indochina is one example of her research. The species *H. taichui* (found in freshwater fish) is widespread in Indochina, particularly in the lower Mekong basin. They compared the genetic structures of seven populations of *H. taichui* from various localities in the lower Mekong Basin, Thailand, Laos, and Vietnam. The study on the species *H. taichui* revealed that it overlaps the same area as *Opisthorchis viverrini*. They found out that only *O. viverrini* has the distribution pattern as a gene flow, *H. taichui* has separate populations (very low gene flow).

Asst. Prof. Urusa Thaenkham

Following this study is the molecular phylogeny of Asian species of the genus *Metagonimus* (Digenea)-small intestinal flukes-based on representative Japanese populations. They analyzed six of the seven species present in Asia using samples collected in central Japan- *M. miyatai, M. takahakii, M. yokogawai, M. hakubaensis, M. katsuradai* and *M. otsurui*. They learned the phylogenetic relationship between *M. hakubaensis, M. katsuradai* and *M. otsurui*. They also discovered that, in Japan, two clusters of related groups had a distant genetic relationship. However, two species-*M. katsuradai* and *M. otsurui*–are very similar in terms of genetics but different in morphology. This systematic study of morphology and genetic is to identify its taxonomy.

The precise classification of species is significant not only for phylogenetics, but also for diagnosis and other fields. Population genetics seek to investigate whether a species coexists in other populations, and its virulence, to control prevalence.

DIVERSITY

Although not working solely with helminths, Dr. Kittipong Chaisri sees helminths playing an important role in answering his main research question on diversity: from ecological parasitism in a changing environment, diversity of host and parasite, habitat, as well as cultural diversity and local perception in human community. He wants to find out how biodiversity links to people's health, particularly on a local scale.


Dr. Kittipong Chaisri

Dr. Kittipong's current research focuses on rodent-borne diseases, including microparasites (e.g., bacterial and viral diseases) and macroparasites (e.g., helminths and ectoparasites) carried by wild rodents in Southeast Asia. For example, one of his studies concerns an arthropod vector of disease: 'A Revised Checklist of Chigger Mites (Acari: Trombiculidae) From Thailand, with the Description of Three New Species'. Chigger mites are a known vector of the *Orientia tsutsugamushi* bacteria, the causative agent of scrub typhus. The mites are found in the infested ears of rodents collected from four categorized habitats related to degree of human disturbance - forest, non-flooded agricultural land, irrigated land, and human settlement–in Thailand. Urbanization potentially affects chigger diversity by reducing their species richness. They have discovered three new species of chigger; *Trombiculindus kosapani sp. nov., Helenicula naresuani sp. nov., and Walchia chavali sp. nov.*, and ten new records in Thailand for the first time. Helminth infections in wild rodents were intensively investigated, as well as ectoparasites. New species of helminth, the filarial nematode *Aonchotheca yannickchavali sp. nov.* was discovered together with more than 20 species of other intestinal worms. Like chiggers, human-modified habitats largely affected helminth diversity by reducing the species richness of parasites.

Dr. Kittipong collaborates with other researchers in the Department of Helminthology and outside the Department as well. He collaborates with Assist. Prof. Piengchan Sonthayanon of the Department of Molecular Tropical Medicine and Genetics for leptospirosis and scrub typhus research. He has also worked for a long time with Prof. Serge Morand (CIRAD), the principal investigator of several research projects in Southeast Asia studying rodents and rodent-borne diseases. In addition, Dr. Kittipong partners with Dr. Ivo Elliott of the Laos Oxford Research Unit in the study of chigger mites and *Orientia tsutsugamushi*.


Cestodes in rats


Nematodes in rats


Chiggers in rat's ear


Paragonimus in rats

HIV/AIDS

Departments and Centers involved: Vaccine Trial Center, Clinical Tropical Medicine

Collaborations: Silom Community Clinic @ TropMed, MORU

BACKGROUND

The human immunodeficiency virus (HIV) infects cells of the immune system, impairing or destroying their function. Infection with the virus leads to immune deficiency and opportunistic infections take advantage of the weakened immune system. Acquired immunodeficiency syndrome (AIDS) is defined by the occurrence of any of more than 20 opportunistic infections or HIV-related cancers.

HIV can be transmitted through unprotected sex with an infected person; sharing of needles and syringes, and the transfusion of contaminated blood. It can also be transmitted between mother and her child during pregnancy, childbirth and breastfeeding.

The field of HIV prevention has changed dramatically in the last six years with clinical trials showing efficacy of pre-exposure prophylaxis (PrEP). When taken consistently, PrEP can reduce one's risk of getting HIV by more than 90%.

DISEASE IMPACT

According to UNAIDS, at the end of 2015 36.7 million people globally were living with HIV, including 1.8 million children. In the same year, an estimated 2.1 million people became newly infected, and 1.1 million died of HIV-related causes. Although the disease is not confined to tropical regions, many countries in the Tropics are severely affected. After sub-Saharan Africa, the Asia and Pacific region has the largest number of people living with HIV. In 2015 the estimated number of people in the region living with HIV was 5.1 million.

A significant challenge is the growing problem of HIV transmission among adolescents. Those less than 18 years of age represent the fastest growing segment of the newly-infected population in many countries. It is thought that young people are not aware of the severity HIV infection used to pose in the 1980s and 1990s and therefore are perhaps more cavalier about their perceived HIV risk.

KEY WORK AT THE FACULTY

Since the RV144 clinical trial, published in 2009, the Faculty has worked on improving the understanding of both epidemiological and immunological factors of HIV. The RV144 trial, which showed an estimated vaccine efficacy of 31% for protecting low-risk Thai volunteers against the acquisition of HIV-1, was the first ever trial to demonstrate any efficacy of a vaccine regimen.

RECENT WORK

In 2016, the Faculty was involved in three articles related to HIV/AIDS.

Punnee Pitisuttithum of the Vaccine Trial Center was involved in a study published in *AIDS* that assessed and compared the ability of three HIV-1 vaccine candidates to elicit CD8+ T cells with direct antiviral function. The three candidates were two adenovirus serotype 5 (Ad5)-based regimens, MRKAd5 and VRC DNA/Ad5, and ALVAC/AIDSVAX. The two Ad5-based regimens elicited CD8+ T cells with limited HIV-1-inhibition breadth while the ALVAC/AIDSVAX regimen did not elicit HIV-1-inhibitory CD8+ T cells. The article concluded that an effective T-cell-based vaccine would need to elicit broader HIV-1-inhibition profiles than those seen from the candidate vaccines in the study.

Prof. Punnee Pitisuttihum

Wirongrong Chierakul, from the Clinical Tropical Medicine department, working with MORU, was involved in a double-blind, randomized, placebo-controlled trial of a new treatment for HIV-associated cryptococcal meningitis published in the *New England Journal of Medicine*. The 451 enrolled patients received either dexamethasone (a type of corticosteroid) or placebo for six weeks. The trial was stopped for safety reasons as the treatment was associated with more adverse events and disability and did not reduce mortality among patients.

Jaranit Kaewkungwal, of BIOPHICS, and Punnee Pitisuttithum, of the VTC, both contributed to a detailed analysis of the antibody response to the RV144 regimen. The study in rhesus macaques

Dr. Wirongrong Chierakul

used the same ALVAC/AIDSVAX B/E gp120 vaccine regimen as that given to humans in RV144 plus a boost 6 months later. The study aimed to increase understanding of the B cell repertoires induced by this vaccine regimen in systemic and mucosal compartments and the potential protective mechanisms of the regimen. The study isolated systemic and intestinal vaccine Env-specific memory B cells. The results suggested that the RV144 regimen in humans likely did not induce antigen-specific B cell trafficking to intestinal mucosae.

Assoc. Prof. Jaranit Kaewkungwal

SILOM COMMUNITY CLINIC @TROPMED

Silom Community Clinic @TropMed (SCC @ TropMed) integrates research with the provision of services and has been involved in many important studies. In 2016, it had 5 HIV/AIDS and STI related publications.

One study, published in the journal *Vaccine*, looked at correlates of immunity to the vaccination against the hepatitis B virus (HBV) among HIV-infected and uninfected men who have sex with men

(MSM). Volunteers who had received the vaccine were retested at 12 months and the study found HIV infection was associated with poor vaccine response. Among the HIV-infected participants, high plasma viral load, elevated pre-vaccination total serum IgG and elevated pre-vaccination IgG1, were all associated with poorer response to vaccination.

Researchers aiming to find out more about the relationship and timing of HIV, herpes simplex virus 2 (HSV-2), and syphilis, worked with at-risk volunteers in the Bangkok MSM Cohort Study to measure incidence, temporal relationships, and risk factors for HIV, HSV-2, and syphilis. The study found that the strongest independent predictor of any single infection was the acquisition of another infection. However, the study showed there was no single independent behavioral factor that was common to the acquisition of the three diseases.

A randomized, double-blind, controlled trial was conducted to determine if intradermal delivery of influenza vaccine might improve the immune response in HIV-infected MSM. Improved immune responses are important because HIV-infected individuals are at increased risk of severe influenza. The study found no significant differences in immune response between participants who had received the vaccine intradermally and those who received normal intramuscular injection. The authors concluded that it is necessary to find additional strategies to enhance immune responses to influenza vaccine among HIV-infected persons.

Another study measured prevalence and correlates of consistent lubricant use among a cohort of Thai MSM. Consistent lubricant use was reported by 77% of men and was associated with consistent condom use with casual partners. Binge drinking, payment for sex, and inconsistent condom use with casual and steady partners were negatively associated with lubricant use. Though consistent lubricant use is common among this Thai MSM cohort, further promotion is needed with MSM engaging in risky sexual practices.

An evaluation of loss to follow-up and effects on biasing exposure-outcome associations in a cohort of men who have sex with men in Bangkok was published. The study found loss to follow-up was 9.6%. Factors independently associated with loss to follow-up were: age (18-21 years), education (primary level or less, secondary or vocational education), living outside Bangkok, sexual orientation (bisexual, heterosexual), HIV infection, and recreational drug use. An effect of loss to follow-up on factors of prevalent HIV infection was found by sexual orientation (transgender) and unprotected anal intercourse. The authors concluded that directed counselling for HIV care should be given to young men who have sex with men, and recreational drug users.

Malaria

Malaria is estimated to cause ~ 850,000 deaths per year worldwide, with most mortality occurring before the age of five. Many countries around Asia, including Thailand, have targeted malaria elimination or eradication by or before 2030. To reach this target, many obstacles must be overcome, including increased artemisinin resistance, a shortage of effective anti-malaria drugs, the lack of effective vaccines, and the movement of people to and from malaria-endemic countries.

The Faculty's Department of Clinical Tropical Medicine has launched more than 10 research projects since 2014 into effective and sustainable malaria elimination, in accord with the current WHO mission toward malaria elimination. These include international projects on containment of artemisinin resistance, clinical trials of all levels (phases I, II and III), and innovative laboratory methodology.

The factors leading to poor outcomes in malaria infection are incompletely understood. Common genetic variation exists in the human genes for Toll-like receptors (TLRs) that alter host responses to pathogen-associated molecular patterns. Genetic variation could alter the risk of complicated malaria. Research by the Department of Tropical Hygiene and the Clinical Malaria Research Unit indicated that genetic variation in *TLR1* affects the host response to *Plasmodium falciparum* malaria in Asian populations.

A study on *Plasmodium malariae* and *Plasmodium ovale* by the Mahidol Vivax Research Unit (MVRU) found that all four human malaria parasite species occurred sympatrically at the China–Myanmar border. While *P. vivax* has become the predominant species, the two minor parasite species also occurred at very low prevalence but were often misidentified or missed by conventional microscopy.

Plasmodium falciparum resistance to artemisinin has extended from Cambodia to Myanmar. A sequential ongoing project, TRAC II, is assessing the therapeutic efficacy of triple drug combinations compared with conventional artemisinin combination therapy in an effort to overcome ACT treatment failures revealed in the first TRAC study. MORU and the wider faculty are the main hub of this multi-center study being conducted at 17 sites in 9 countries across Asia and Africa.

As part of two studies on the containment of artemisinin resistance, the Faculty acts as the reference laboratory for work related to drug studies and for *kelch* 13, the gene associated with artemisinin resistance. For studies on heathy volunteers in phase I, the Faculty has been working in three important areas. The first, drug-to drug interaction between primaquine and other major antimalarial drugs, has been published, and all support the WHO recommendation of single low-dose primaquine as a transmission-blocking agent. The other two ongoing projects are additional regimens to improve the effectiveness of chemoprophylaxis in mass drug administration by adding ivermectin or RTSS vaccine (Mosquirix™) to antimalarial drugs.

The Department of Molecular Tropical Medicine and Genetics was involved in research on the prevalence and incidence at district and village levels in the Chey Saen District of northern Cambodia, the conclusions of which illustrated the importance of prevalence surveys in targeting interventions for elimination.

No new antimalarial drugs have reached Phase II clinical trials since the availability of artemisinin drugs outside China 30 years ago. The Faculty has been given an opportunity to access the efficacy of

three new drugs (OZ 439, KAE609, and KAF156) in patients with acute malaria infection for the first time. Some of the results have been published, and the good news is that all three drugs are effective and have high potential as future antimalarial drugs.

During the year, the Faculty commenced a Mass Drug Administration project in Savannakhet Province, Laos. This community-based program is recruiting 2,000 volunteers in four villages, randomized to dihydroartemisinin-piperaquine plus primaquine (DHP+PQ). Phase I and II are being conducted with healthy volunteers, and will be followed by phase III, which will recruit infected volunteers.

A Malaria Consortium Asia publication in the *Malaria Journal* on behavior change communication to fight artemisinin-resistant parasites in Cambodia, including broadcasting malaria prevention, diagnosis and treatment messages via TV, radio and mobile broadcasting units, reported improvements in attitudes and behaviors among the population, including an increase in people seeking treatment for fever.

Asymptomatic parasitemia is common even in areas of low seasonal malaria transmission, but the true proportion of the population infected has not been estimated because of the limited sensitivity of the available detection methods. Research by the Departments of Molecular Tropical Medicine and Genetics, Tropical Hygiene, and the Mahidol Oxford Tropical Medicine Research Unit revealed that malaria parasitemia persists in humans at levels that optimize the probability of generating transmissible gametocyte densities without causing illness.

The Department of Tropical Hygiene and the Center of Excellence for Biomedical and Public Health Informatics (BIOPHICS) were involved in a study of the effectiveness of Thailand's electronic Malaria Information System (eMIS) development and implementation. It was concluded that the system has achieved its objective of helping to improve the quality of malaria surveillance in Thailand, by providing malaria staff working at the point of care with close-to-real-time case management data quality, covering case detection, case investigation, drug compliance, and follow-up visits.

A paper published in *The Clinical infectious Disease Journal* reported that the rapid decline in artemisinin effectiveness on the Thailand-Myanmar border is linked to the increasing prevalence of mutations in specific regions of the malaria parasite's *kelch* gene. Led by Dr. Aung Pyae Phyo at the Shoklo Malaria Research Unit, the study used data from a 10-year study of 1,005 patients with uncomplicated *P. falciparum* malaria at SMRU clinics on the Thai-Myanmar border in northwestern Thailand. This study demonstrated for the first time that artemisinin resistance leads to failure of the artemisinin partner drug, in this case, mefloquine, and that first-line artemisinin combination therapy (ACT), introduced here in 1994, has finally fallen to resistance.

Coordinated by Lorenz von Seidlein, MORU's targeted malaria elimination (TME) study is evaluating the treatment of whole villages with a high prevalence of malaria carriers. The TME study sites in Cambodia, Laos, Myanmar, Thailand and Viet Nam are each enrolling approximately 2,000

subjects. The studies require profound community engagement, which is essential to facilitate the buy-in from villagers to contribute to the extensive surveys and to assure proper coverage of mass drug administration in the intervention villages. The intervention's effectiveness is carefully monitored over time through assessing malaria prevalence, including asymptomatic carriers in the intervention compared with the control villages.

In addition to the clinical studies, Dr. Kesinee Chotivanich and her team are working on improving *in-vitro* laboratory methods to test the sensitivity of the parasite to artemisinin, which will be an important additional monitoring tool.

A collaborative study funded by the Newton Fund, between the Department of Clinical Tropical Medicine, the Malaria Vivax Research Unit, and Imperial College, is assessing antimalarial compounds that can block transmission of *P. falciparum* by killing both male (which are more sensitive to antimalarials) and female artemisinin-resistant gametocytes, and is working with several compounds including ivermectin.

A five year study, a collaboration between MVRU and the Department of Molecular Tropical Medicine and Genetics, is currently underway into how *P. vivax* parasites identify targeted red blood cells, with the aim of identifying vaccine candidates. MVRU is screening new antimalarial compounds for *P. vivax* liver stage with MMV support. As part of the *P. vivax* liver-stage consortium funded by BMGF, the group has contributed to the progress of understanding hypnozoite biology.

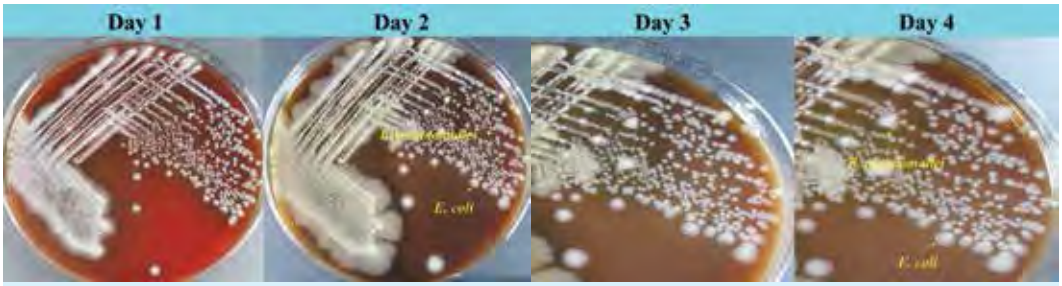
A US Department of Defense/CDMRP-funded mass drug administration project commenced in 2016, which will administer ivermectin in two provinces in Southern Thailand with the aim of killing *P. vivax* parasite-hosting mosquitos within half their usual lifespan, hence preventing them from re-infecting.

A Gates Foundation- and NIH-funded project at MVRU is gaining knowledge of how asymptomatic and symptomatic individuals contribute to malaria transmission by determining the level of parasites required to trigger vector infection. Biomarkers for recent infection in the endemic population have been studied at MVRU in collaboration with WEHI and Ehime University, Japan, using protein array and cell free-science system.

In the battle to contain artemisinin resistance, the Faculty has developed a technique to detect artemisinin-resistant parasites *in vitro*.

During 2016, a Gates Foundation-funded project based at MORU, Genetic Epidemiology of Drug-Resistant Malaria in the Greater Mekong Subregion (GenRe-Mekong), part of MalariaGen, ramped up its genetic testing of malaria parasites on samples from endemic regions of Cambodia, Vietnam, Laos, Thailand, and South China. Strategically important information on the genotypes of parasites in blood samples will be supplied to national control programs and other elimination projects. High-throughput genetic technologies are used to type each sample for hundreds of genetic markers, to assess whether the parasite is resistant to artemisinin or other antimalarial drugs, and where the parasite has come from. Whole-genome sequencing (WGS) on the best quality samples studies genetics to the highest possible level of resolution. Parts of the project are being conducted at the Wellcome Trust Sanger Institute, Hinxton, at Oxford University, and by local partners in endemic countries.

The MVRU, in collaboration of PennState University, also provides opportunities for young researchers to study and perform malaria research under the D43 NIH-funded training program.



Sheep blood agar
B. psdudomallei forms creamy Colonies which are non-haemolytic and resemble a conliform Slight metalli sheen. Becuming dry and wrinkled after 2 days of incubation *E. coli* has similar morphology and tends to overgrow *B. pseudo*.

Melioidosis, a disease caused by the gram-negative environmental bacillus *Burkholderia pseudomallei*, is endemic in southeast Asia and northern Australia, has a mortality rate of up to 40 % in northeast Thailand and 20 % in Australia. *Burkholderia pseudomallei* is present in soil and water in endemic areas, and infection is acquired through skin inoculation or wound contamination, ingestion, and inhalation. The isolation and identification of *B. pseudomallei* requires specific microbiological facilities and experienced microbiologists. It is classified as a bioweapon (select agent) organism by the CDC.

The mortality rate of untreated patients could be up to 90%, and many die before the diagnosis is made. The burden of this disease is thus largely hidden. To begin to counter this, a new national regulation under the Thai Ministry of Public Health's Infectious Disease Act, introduced in 2016, now requires all hospitals in Thailand to report melioidosis cases (culture-positive cases and death rates) to the CDC.

A joint study by the Department of Microbiology & Immunology and MORU on ways to detect antibodies to *Burkholderia pseudomallei* rapidly focused on the development of four rapid enzyme-linked immunosorbent assays, used serum samples from 141 culture-confirmed melioidosis patients from Thailand, and 188 healthy donors from Thailand, and 90 healthy donors from the United States as controls. The findings suggested that O-polysaccharide type rapid enzyme-linked immunosorbent assays are likely the most effective for the serodiagnosis of melioidosis, in areas where it is both endemic and non-endemic.

The Department of Microbiology and Immunology has developed a melioidosis rapid test kit for use at the point of care, and has patented the active protein within it. It captures the antibody in a serum, with similar functionality to a pregnancy test kit, providing a test culture-confirmed 90% sensitivity result in approximately 5 minutes.

A five-year Wellcome Trust-funded prevention project to encourage melioidosis precautionary behaviors amongst 9,000 diabetics in Ubon Ratchathani Province is encouraging the use of waterproof boots, foot powder, boiled water, and avoiding work during heavy rain, as a range of disease-prevention methods for working farmers.

An NIH/NIAID funded research project, led by the Department of Microbiology and Immunology in collaboration with the University of Washington, entered its second year of operation in 2016, and aims to understand the mechanisms underlying patients' poor responses to therapy, to help identify new strategies for treatment and improve public health. The study's numerous sites are concentrated in northeastern Thailand.

The Melioidosis Research Coordination Network has been set up, based in the Faculty of Tropical Medicine, to collect and curate data on the total number of culture-confirmed melioidosis cases and deaths and make these data open-access, to promote a common understanding of the risk and incidence of melioidosis, to connect researchers to potential support from the research community across the biological resiliency spectrum, and to convene funders that can support melioidosis research.

In order to dramatically improve slow diagnosis time taken using culture detection, MORU's Melioid Laboratory in Ubon Ratchathani is currently testing the FilmArray Multiplex desktop PCR system, as well as a handheld machine and lateral flow strip test.

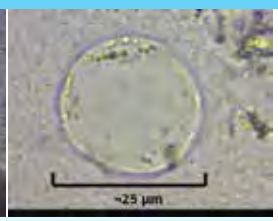
Departments and Centers involved in disease area – Protozoology, Helminthology, Medical Entomology, Tropical Pediatrics

KEY WORK DURING 2016 AT THE FACULTY

A National Health Security MOU was signed in February 2016 between seven Thai government organizations–the Ministry of Agriculture and Cooperatives, the Ministry of Natural Resources and Environment, the Ministry of Social Development and Human Security, the Ministry of Interior, the Ministry of Labor, the Ministry of Education, the Ministry of Public Health–and the Thai Red Cross Society, to establish multi-disciplinary & multi-sectoral collaboration at all levels of Thai society. This collaborative effort is being implemented in accordance with the National Strategic Framework for Preparedness and Response to Emerging Infectious Diseases, the Respond and One Health Workforce projects of Thailand One Health University Network (THOHUN – supported by USAID), which was launched in 2012.

This project was previously directed by the Dean of the Faculty, Dr. Pratap Singhasivanon, who now serves as a project consultant since reassuming the position of Dean in late 2016. The project's aim is a significant improvement in human, animal and environmental health throughout Thailand by 2021. The National Coordinating Office, led by Dr. Saengduen Moonsom, is located within the Faculty of Tropical Medicine. The One Health Workforce project will run until 2021, and is intended to develop ways for these seven ministries to work together throughout Thailand to develop effective health infrastructure and One Health action plans.

Blasto spp animal

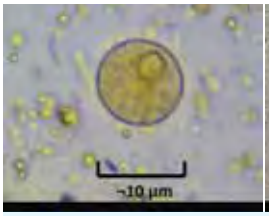


Blasto spp human

Blastocystis trophozoite

A key element of the work being done is improving the sensitivity of immunological diagnosis and disease prevention of amebiasis using the One Health approach, i.e., collaboration between the research team and provincial and district public health sectors/authority and the community in Thailand's north-western district of Thasongyang, Tak Province, an endemic area for contaminated food and water due to weak infrastructure and use of untreated river water.

Partial funding for the research and student tuition fees is provided by the USAID One Health Workforce program and faculty Dean's Research Fund. The field survey element of the project was completed during 2016, with 300 cases reported by Thasongyang Hospital, which currently has ineffective microscopy testing capability and lacks effective testing ability. Specific diagnostic development, test evaluation and analysis of amebic dysentery-clinical will be completed during 2017.



E.his-E.dispar cyst

E.his-E.dispar troph

Other Research Areas

With eleven departments and over 190 researchers in the Faculty, the range of research areas is very broad. These pages highlight a few of the other areas covered by the work of Faculty and MORU staff.

Non-Communicable Diseases

Non-communicable diseases are becoming ever more prevalent in Thailand and other tropical countries and research at the Faculty reflects this. In 2016, published work included –

OBESITY

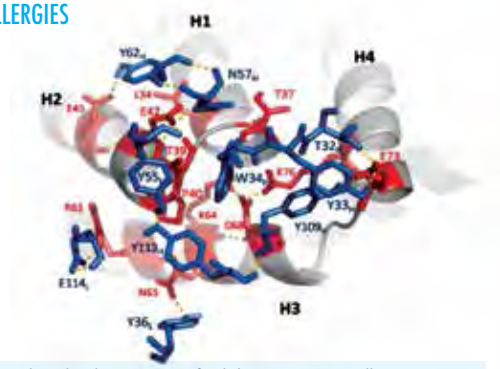
- Rungsunn Tungtrongchitr of the Department of Tropical Nutrition and Food Science, together with university colleagues, published their study aiming to identify the genes responsible for obesity. In the study, they sequenced the protein-coding regions in the total genome of two obese subjects and one healthy-weight subject in the same family. In the study, they identified 709 functional variants that were differentially expressed. Genotyping revealed three genes to be associated with the regulation of feeding behavior and energy expenditure and so may play a part in obesity. (Kaewsutthi S, Santiprabhob J, Phonrat B, Tungtrongchitr A, Lertrit P, Tungtrongchitr R. Exome sequencing in Thai patients with familial obesity. Genet Mol Res 2016 Jul;15(2):gmr.15028311.)

DIABETES

- Faculty researchers, along with colleagues from the Ministry of Public Health, published a study determining the impact of diabetes mellitus on the outcome of pulmonary tuberculosis treatment in northern Thailand. By reviewing registry data, they found tuberculosis treatment outcomes were not significantly different between patients with diabetes and those without. (Satung J, Kaewkungwal J, Silachamroon U, Pokaew P, Rattanajiamrangsree S, Kasetjareon Y, Lawpoolsri S. Treatment outcomes among diabetic patients with tuberculosis in Thailand. Southeast Asian J Trop Med Public Health 2016 Nov;47(6): 1209-20.)

- Data from a study by researchers from the Faculty, working with collaborators from other Thai institutions, indicated that the genetic risk of pre-diabetes may be linked to *ADIPOQ* rs266729 C>G polymorphism. The authors suggest that the polymorphism could be used in genetic screening for pre-diabetes among Thais. (Chaikhiandee S, Phonrat B, Tungtrongchitr A, Suriyaprom K, Chuengsamarn S, Uttamachai C, Tungtrongchitr R. ADIPOQ polymorphisms among Thais with pre-diabetes. Southeast Asian J Trop Med Public Health 2016 Nov;47(6): 1306-14.)

ALLERGIES



Novel IgE binding epitope of Fel d 1, a cat major allergen
Source: Nitaya Indrawattana

- Nitaya Indrawattana from the Department of Microbiology and Immunology with other researchers from Faculty of Medicine Siriraj Hospital identified a novel IgE-binding epitope of the cat major allergen, Fel d 1. This discovery will be useful in the design of component resolved immunotherapy and diagnosis of cat allergies. (Tasaniyananda N, Tungtrongchitr A, Seesuay W, Sakolvaree Y, Indrawattana N, Chaicumpa W, Sookrung N. A novel IgE-binding epitope of cat major allergen, Fel d 1. Biochem Biophys Res Commun 2016 Feb;470(3): 593-8.)

CANCER

- MORU researchers working with a team from universities in the UK, Laos and Canada, created a dynamic compartment model run over 100 years to compare the cost-effectiveness of different HPV vaccination options in Lao PDR. The study found that vaccinating 10-year-old girls and having a catch-up vaccination element for females aged 11–25 years was very cost-effective in terms of Disability-Adjusted Life Years (DALYs) averted. (Chanthavilay P, Reinharz D, Mayxay M, Phongsavan K, Marsden DE, Moore L, White LJ. The economic evaluation of human papillomavirus vaccination strategies against cervical cancer in women in Lao PDR: a mathematical modelling approach. BMC Health Serv Res 2016 Aug;16: 418.)

- Songsak Petmitr, from the Department of Molecular Tropical Medicine and Genetics, worked with researchers from three other Thai institutions on a study that aimed to evaluate the expression and prognostic value of matrix metalloproteinase (MMP)-13 and its tissue distribution pattern in human breast cancer and normal tissues. The study found MMP-13 was frequently present in breast tumors; this suggests that it may have a significant role in breast cancer invasion and metastasis. (Kotepui M, Punsawad C, Chupeerach C, Songsri A, Charoenkijkajorn L, Petmitr S. Differential expression of matrix metalloproteinase-13 in association with invasion of breast cancer. Contemp Oncol 2016 Aug;20(3): 225-8.)

Other Infectious Diseases

A large number of diseases can be classified as neglected, emerging or re-emerging. While these sometimes do not receive the political, media, and financial attention of other diseases, they are important areas of research. The Faculty's 2016 publications included -

TUBERCULOSIS

- Francois Nosten of MORU, with colleagues from the University of Ottawa, published the results of a multi-methods qualitative study that examined access to tuberculosis treatment by refugees and migrants in Tak Province in Thailand. The study found that access to treatment depends on the interplay between health-system accessibility, population ability to access services and legal status. The study showed that, in Tak Province, refugees faced fewer barriers to accessing TB treatment than migrants. (Tschirhart N, Nosten F, Foster AM. Access to free or low-cost tuberculosis treatment for migrants and refugees along the Thailand-Myanmar border in Tak province, Thailand. Int J Equity Health 2016 Jul;15(1): 100.)

SCRUB TYPHUS

Left: Chigger mite, vector of scrub typhus in rat's ear. Right: Chigger mite on slide. Source: Yudthana Samung

- Researchers from MORU and collaborating institutions tested an alternative reference method for scrub typhus, the enzyme-linked immunosorbent assay (ELISA). In their study, they systematically determined the optimal sample dilution and cut-off optical density and estimated the accuracy of the ELISA using data from 135 patients. The IgM ELISA for scrub typhus was found to have a high diagnostic accuracy and was less subjective than the usual method, the IgM immunofluorescence assay. (Blacksell SD, Lim C, Tanganuchitcharnchai A, Jintaworn S, Kantipong P, Richards AL, Paris DH, Limmathurotsakul D, Day NP. Optimal Cutoff and Accuracy of an IgM Enzyme-Linked Immunosorbent Assay for Diagnosis of Acute Scrub Typhus in Northern Thailand: an Alternative Reference Method to the IgM Immunofluorescence Assay. J Clin Microbiol 2016 Jun;54(6): 1472-8.)

- In a case report, a team from MORU described the decisions and outcomes in a case of scrub typhus infection in pregnancy. The patient was from a refugee camp on the Thailand-Myanmar border. Chloramphenicol treatment was given and this averted maternal mortality, but not fetal mortality. The authors suggest there is an urgent need for reliable field based rapid diagnostic tests for scrub typhus that are appropriate for resource-limited settings. (Watthanaworawit W, Kolakowska E, Hanboonkunupakarn B, Ling C, McGready R. Scrub typhus infection in pregnancy: the dilemma of diagnosis and treatment in a resource-limited setting. Clin Case Rep 2016 Jun;4(6): 584-8.)

RABIES

- Researchers from the Center of Excellence for Antibody Research and the Department of Social and Environmental Medicine, with a colleague from the Thai Red Cross Society, investigated the molecular epidemiology and genetic diversity of the rabies virus in Thailand. The study found there were strong genetic relationships between the virus in Thailand and the virus in Cambodia, Vietnam and Laos. The information from this study gives a better understanding of the dynamics of rabies virus transmission between Thailand and its neighboring countries. (Benjathummarak S, Fa-Ngoen C, Pipattanaboon C, Boonha K, Ramasoota P, Pitaksajjakul P. Molecular genetic characterization of rabies virus glycoprotein gene sequences from rabid dogs in Bangkok and neighboring provinces in Thailand, 2013-2014. Arch Virol 2016 May;161(5): 1261-71.)

HEPATITIS

- MORU researchers published their study that aimed to evaluate a screening program for hepatitis B in pregnant women as part of antenatal services at the Shoklo Malaria Research Unit. The study identified high hepatitis B surface antigen seropositivity among pregnant women on the Thailand-Myanmar border. The authors suggest that the hepatitis B vaccination program does not adequately reach these marginalized and moving populations and that anti-retrovirals during pregnancy should be considered. (Banks T, Kang J, Watts I, Tyrosvoutis ME, Min AM, Tun NW, Keereecharoen L, Simmawong W, Wanyatip S, Hanboonkunupakarn B, Nosten F, McGready R. High hepatitis B seroprevalence and risk factors for infection in pregnant women on the Thailand-Myanmar Border. J Infect Dev Ctries 2016 Apr;10(4): 384-8.)

- In a population based study, researchers from the Departments of Clinical Tropical Medicine and Tropical Hygiene, with colleagues from other Thai research institutes, evaluated the burden of liver abscess in Thailand. They

also developed a predictive scoring system to estimate the survival of patients with liver abscess. As part of the study, 8,423 patients from 844 hospitals were followed from their diagnosis. The information gained and the tool developed will help hospitals and doctors plan and prioritize care. (Poovorawan K, Pan-Ngum W, Soonthornworasiri N, Kulrat C, Kittitrakul C, Wilairatana P, Treeprasertsuk S, Kitsahawong B, Phaosawasdi K. Burden of Liver Abscess and Survival Risk Score in Thailand: A Population-Based Study. Am J Trop Med Hyg 2016 Sep;95(3): 683-8.)

Public Awareness, Perception and Policy

Increased understanding of how health and disease are perceived and how health policies are implemented is important for ensuring progress. In 2016, publications from the Faculty included -

AWARENESS AND PERCEPTION

- The results of a mixed methods study looking at family planning knowledge, attitudes and practices (KAP) amongst refugee and migrant women on the Thailand-Myanmar border were published by researchers at MORU, with others from the Australian Catholic University and The Planned Parenthood Association of Thailand. The study included the positive findings that more than 90% of women knew about contraceptives for birth spacing and that nearly all knew where to get family planning supplies. It also highlighted current gaps; over 90% of women did not know about emergency contraception and there were misconceptions around when child-bearing years end and sterilization. (Salisbury P, Hall L, Kulkus S, Paw MK, Tun NW, Min AM, Chotivanich K, Srikanok S, Ontuwong P, Sirinonthachai S, Nosten F, Somerset S, McGready R. Family planning knowledge, attitudes and practices in refugee and migrant pregnant and post-partum women on the Thailand-Myanmar border - a mixed methods study. Reprod Health 2016 Aug;13(1): 94.)
- A study assessing the short term effects of edutainment on changes in knowledge and attitudes around the Expanded Programme for Immunisation among an under-served minority population was published by Faculty researchers with a colleague from the Ministry of Public Health. Pre-post tests showed there was a significant immediate improvement in knowledge after the participants watched the show and an increased proportion of participants reported positive perceptions of the Expanded Programme for Immunisation process. (Dway NS, Soonthornworasiri N, Jandee K, Lawpoolsri S, Pan-Ngum W, Sinthuvanich D, Kaewkungwal J. Effects of edutainment on knowledge and perceptions of Lisu mothers about the immunisation of their children. Health Educ J 2016 Mar;75(2): 131-43.)
- Sara Canavati, from the Department of Clinical Tropical Medicine, and collaborators from a number of NGOs and institutions working in Cambodia, published the results of their study that aimed to assess the potential added effect of 'intense' behavior change communication interventions. 'Intense' communication strategies, such as interpersonal communication with village health volunteers and village malaria workers, and the use of mobile broadcasting units, were shown to support positive improvements in both attitudes and behaviors regarding malaria. (Canavati SE, de Beyl CZ, Ly P, Shafique M*, Boukheng T, Rang C, Whittaker MA, Roca-Feltrer A, Sintasath D. Evaluation of intensified behaviour change communication strategies in an artemisinin resistance setting. Malar J 2016 Apr;15(1): 249.)

POLICY AND PRACTICE

- Researchers from MORU, along with a colleague from Tulane University, documented and increased vaccine coverage among migrant school-children on the Thailand-Myanmar border. Over 12,000 children were enrolled in a school-based immunization program and evaluated for vaccination completion and timing, for six different vaccines.

The study found that school-based immunization programs offer a suitable vaccine delivery mechanism for hard-to-reach populations, but that so far, overall vaccine coverage in migrant populations is low. (Kaji A, Parker DM, Chu CS, Thayatkawin W, Suelaor J, Charatrueangrongkun R, Salathibuppha K, Nosten FH, McGready R. Immunization Coverage in Migrant School Children Along the Thailand-Myanmar Border. J Immigr Minor Health 2016 Oct;18(5): 1038-45.)

- Jaranit Kaewkungwal and Amnat Khamsiriwatchara from BIOPHICS, together with researchers from Bhutan, Australia, India and the UK, published the results of a pilot study evaluating the performance and user acceptance of a new malaria and febrile information system in Bhutan. The system is a combination of web-based and mobile technology that captures surveillance data and generates real-time reports. The pilot study found data completeness was nearly 10% higher using the system than with paper logs and data turnaround time was faster. User satisfaction with the system was high and there was a high degree of willingness among health facilities to adopt the system. (Tobgay T, Samdrup P, Jamtsho T, Mannion K, Ortega L, Khamsiriwatchara A, Price RN, Thriemer K, Kaewkungwal J. Performance and user acceptance of the Bhutan febrile and malaria information system: report from a pilot study. Malar J 2016 Jan;15: 52.)

Research and Healthcare Methods

How to carry out research and care, including topics of ethics, consent and data, is an important area of development. The Faculty produced a variety of work in 2016, including -

ETHICS

- Bipin Adhikari of MORU, with several collaborators from Nepal and Denmark, assessed the current status of knowledge, attitudes and practices (KAP) regarding healthcare ethics in a tertiary teaching hospital in Nepal. The study found a significant proportion of doctors and nurses were not aware of the major healthcare ethics documents that lay out the core principles in clinical practice, but that there was high motivation for learning more about medical ethics. (Adhikari S, Paudel K, Aro AR, Adhikari TB, Adhikari B, Mishra SR. Knowledge, attitude and practice of healthcare ethics among resident doctors and ward nurses from a resource poor setting, Nepal. BMC Med Ethics 2016 Nov;17: 68.)

- Phaik Yeong Cheah and Nicholas White of MORU published a paper on the ethical considerations of mass drug administration (MDA) to eliminate malaria in low transmission settings. Ethical issues include balancing of risk versus benefit, balancing individual and public health interests, and potentially limiting individual autonomy by making participation in the MDA compulsory. As the effectiveness of MDA can be limited by the non-participation of just a small number of individuals, the ethical issues are pertinent. The authors concluded "there needs to be careful assessment of the risk and benefits, and of the balances between individual and public interest, as well as a careful consideration of any restrictions placed on autonomy". (Cheah PY, White NJ. Antimalarial mass drug administration: ethical considerations. Int Health 2016 Jul;8(4): 235-8.)

DATA

- Direk Limmathurotsakul, and colleagues from the South East Asia Infectious Disease Clinical Research Network, produced an analytical article describing their experiences of sharing data in an international research collaboration. They outlined four key points for successful data sharing – including data-sharing in protocols; informed consent; defining responsibilities of data users, and educating investigators about data sharing. (Grue L, Siddiqui S, Limmathurotsakul D, Kamaludi A, Karyana M, Lau CY. Commentary: data sharing in South East Asia. BMJ 2016 Oct;355: i5363.)

Traditional Thai Medicine

In recent years, there has been increased interest in research into Traditional Thai Medicine. In 2016 Faculty papers included –

Lakoocha Tree
Source: th.wikipedia.org

- Phiraphol Chusongsang, from the Department of Social and Environmental Medicine, working with university colleagues, tested the efficiency of *Artocarpus lakoocha* extract, traditionally known as puag-haad, in treating taeniasis. The team investigated the *in-vitro* anthelmintic properties of puag-haad against the trematode causing taeniasis, *Schistosoma mansoni,* and found that a medium of 250 µg/ml puag-haad was more effective in causing damage to the trematodes than praziquantel at a concentration of 175 µg/ml. The authors concluded that further work was needed to determine the mechanism, efficiency and safety *in-vivo* of using puag-haad. (Pakchotanon P, Molee P, Nuamtanong S, Limpanont Y, Chusongsang P, Limsomboon J, Chusongsang Y, Maneewatcharangsri S, Chaisri U, Adisakwattana P. Molecular characterization of serine protease inhibitor isoform 3, SmSPI, from Schistosoma mansoni. Parasitol Res 2016 Aug;115(8): 2981-94)

- Sumate Ampawong, of the Department of Tropical Pathology, with a university colleague, investigated the antioxidative properties of Phikud Navakot, a combination of nine herbs that has been used traditionally in Thai medicinal formulas to relieve circulatory disorders, on erythrocytes *in vitro*. The study found that Phikud Navakot was able to reduce malformations in sheep erythrocytes with hydrogen peroxide-induced oxidative stress. The study also found that ascorbic acid, used as a comparison in the study, had similar effects. (Kengkoom K, Ampawong S. In Vitro Protective Effect of Phikud Navakot Extraction on Erythrocyte. Evid Based Complement Altern Med 2016 Nov; 2016: 1961327.)

- Three researchers from the Department of Medical Entomology tested the topical application of the essential oil of the *Piper retrofractum Vahl* fruit on female *Aedes aegypti* and *Culex quinquefasciatus*. Six concentrations of the oil in acetone, plus acetone only, were tested. 0.5 µL of the mixture was put on the pronotum of the mosquitoes, and mortality was observed after 24 hours of exposure. The LD50 and LD99 of essential oil in acetone against *Ae. aegypti* were found to be 8.86% and 23.21% and against *Cx. quinquefasciatus* 6.95% and 17.35%. The paper was the first report of the adulticidal effects of the essential oil. (Subsuebwong T, Attraphadung S, Potiwat R, Komalamisra N*. Adulticide efficacy of essential oil from Piper retrofractum Vahl against Aedes aegypti and Culex quiquefasciatus. Trop Biomed 2016 Mar;33(1): 84-7.)

Facilities and Services

"Alongside the departments, centers, and collaborations, the Faculty has an important set of facilities and services, for researchers, students and the general public. The following pages give more information on the work and achievements of"

- Bangkok School of Tropical Medicine

- Hospital for Tropical Diseases

- Support Offices

- Office of Research Services

- Central Equipment Unit

- Tropical Medicine Diagnostic Reference Laboratory

- Laboratory Animal Science Unit

- Joint International Tropical Medicine Meeting

Bangkok School of Tropical Medicine

Assoc. Prof. Warangya Wongwit
- Assistant Dean for Education

Lect. Dr. Amornrat Aroonrual
- Assistant Dean for Student Affairs

Now on its 56th year, the Bangkok School of Tropical Medicine (BSTM) has sustained its focus on providing excellent real-world education. The School preserves its edge to be the only tropical medicine school located in the tropics, providing real cases and absolute training experiences.

Mahidol University implemented a new strategy where the curriculum will be changed to an Outcome-Based Education (OBE) curriculum. OBE is a method of curriculum design and teaching that focuses on what students can actually do after they are taught and aims to produce globally competitive graduates. In response to the University's strategy, the School will transform its curriculum into an Outcome-Based Education (OBE). The School has conducted five workshops for all the lecturers–OBE, the development of Program Learning Outcomes (PLOs) and Course Learning Outcomes (CLOs), constructive alignment of the program, and rubric assessment in the Faculty.

As a result, one program, the Ph.D. in Clinical Tropical Medicine, was approved by Mahidol University Council and is subject for implementation in August 2017. In addition, three programs have been revised and submitted to the Faculty of Graduate Studies for approval. To respond to Mahidol University's strategy of excellence in outcome-based education for globally-competent graduates, Assoc. Prof. Waranya Wongwit aims to revise all nine programs into OBE and at the same time, meet the assessment of the ASEAN University Network-Quality Assurance (AUN-QA). AUN-QA is responsible for promoting quality assurance in higher education institutions and raise the quality of higher education.

Another plan is to move the two programs- Graduate Diploma and Master of Science in Biomedical and Health Informatics to online courses. These two courses will be temporarily closed until 2019.

2016 IN NUMBERS

- 58 new students enrolled
- 64% international students
- 20 nationalities
- 7 Programs on offer
- 16 Faculty scholarships awarded
- 28 student events
- 27 outbound exchange students

2016 HIGHLIGHTS

- Assoc. Prof. Waranya Wongwit succeeded Prof. Sasithon Pukritayakamee as the Assistant Dean for Education and Lect. Dr. Amornrat Aroonual succeeded Asst. Prof. Kasinee

Buchachart as the Assistant Dean for Student Affairs (in October 2016).

- 27 students went abroad through the Student Outbound Program, where students had the opportunity to learn, increase their research skills, and experience the culture and lifestyle of foreign countries. This is the School's highest number of outbound students on record. The students went to England, France, Germany, Japan, Laos, Singapore, South Korea, Spain, and the United States of America.
- The School has students enrolled from 20 countries. This diverse student body helps individuals become familiar with different cultural norms, traditions, and perspectives, as well as diseases and health issues specific to certain areas.
- Launched a new scholarship, the *Research Assistant Scholarship,* for qualified PhD and MSc students.
- In line with the revision of the curriculum to OBE, the School set a program where students will learn 4 Soft Skills as requirements for the Faculty of Graduate Studies. Students are expected to improve their skills in Language, Information Technology, Leadership and Management, and Research. Students must pass these soft skills and they will be recorded on their transcripts.

COURSES OFFERED BY THE BANGKOK SCHOOL OF TROPICAL MEDICINE
Diploma in Tropical Medicine and Hygiene
Master of Clinical Tropical Medicine
Master of Clinical Tropical Medicine (Tropical Pediatrics)
Doctor of Philosophy in Clinical Tropical Medicine
Master of Science in Tropical Medicine
Doctor of Philosophy in Tropical Medicine
Master of Science in School Health

Hospital for Tropical Diseases

Prof. Polrat Wilairatana
- Director

The Hospital for Tropical Diseases is Thailand's center of excellence for the treatment of tropical diseases. It also specializes in travel medicine & counselling for both Thai and foreign patients, laboratory services, and in the training of almost 200 assistant nurses. Medical students from other Mahidol faculties are invited to study an introduction to medicine at the hospital. Strong links are maintained with researchers based in all of the Faculty's departments, especially with the Departments of Clinical Tropical Medicine and Tropical Pediatrics, who conduct regular hospital-based research, to ensure that translational research and training opportunities are maximized. The hospital collaborates with Ramathibodi Hospital on clinical trials and the Thai Ministry of Public Health (MoPH) to steer the development of national guidelines for the treatment of tropical diseases throughout Thailand.

The hospital is preparing itself for the treatment of emerging infectious diseases and the threat posed by drug resistance, as the prevalence of traditional tropical diseases continues to decline. Malaria cases are continuing to decrease, but cases have become more complicated due to multi-drug resistance. The hospital and the wider Faculty is heavily focused on preventing resistance spreading from Southeast Asia to other areas of the world. The hospital avoids competing with general hospitals in Bangkok by continuing to develop its niche areas, and is increasing its public exposure and awareness via TV and radio advertising in Bangkok.

2016 IN NUMBERS

- Number of outpatient visits – 82,111
- Number of inpatient visits – 1,993
- Number of specialists – 36
- Number of visits to the Travel Clinic – 5,327
- Diagnosis and treatment of:
- Malaria – 93 (OPD 48, IPD 45)
- Dengue – 898 (OPD 443, IPD 455)

2016 HIGHLIGHTS

The hospital's main development areas during the year were an increase in the use of the Travel Clinic for both pre- and post-travel medical services, including vaccinations (5,327 patients in 2016, 3,845 in 2015), and the introduction of consultation-via-email in the Travel Clinic. 2016 saw an increase in the number of doctors and medical students attending internships at the hospital, which includes monthly practical work experience in different hospital departments, and the renewal of laboratory accreditation of the hospital's hematology, microscopy, clinical chemistry, immunology and blood bank labs for a further 3 years following a successful audit by a team from the Thailand Medical Technology Council.

Support Offices

The Faculty's eight support offices provide crucial administrative support to the Faculty's core research and teaching activities, allowing for efficient and effective day-to-day operations.

2016 IN NUMBERS

- 5 successful international sponsored research grant applications
- 31 successful domestic sponsored research grant applications
- 21 sponsored research grants under management
- 9 Faculty grants awarded
- 4 new MOUs with international organizations and institutions
- 19 visiting lecturers organized
- 7 international affiliations managed and maintained
- 3 international staff exchanges organized
- 4 issues of TROPMED Inter News published
- Over 160 documents edited
- 9 international courses organized
- 12 projects supported by the Laboratory Animal Science Unit
- 31 collaboration MOUs maintained
- More than 20 student exchanges organized
- 706 participants attended the Joint International Tropical Medicine Meeting 2016

Office of Research Services (ORS)

A 'one stop shop' to promote, support, and coordinate research in the Faculty. The Office consists of nine key areas, each supporting different key components of research at the Faculty. Spanning Training and Ethics to research administration, IT and Event Planning, the Office has a key role to play in the Faculty. To learn more about the work of the ORS in 2016, go to page 94.

Office of Research Integrity and Compliance

This new office works to ensure research at the Faculty meets the highest standards of good research practice and that there is public trust in the Faculty's research. The Office does this through providing clear policies on how research should be performed, regular training, compliance checks and promoting a culture of integrity in research.

Office of Research Infrastructure and Facilities

New in 2016, this office coordinates the running and management of the Faculty's shared facilities – the Central Equipment Unit, the Laboratory Animal Science Unit, the Tropical Medicine Diagnostic Research Laboratory, and the new BSL3 laboratory.

Office of International Cooperation and Networking

This office is responsible for supporting the Faculty in international cooperation, networking and alliance management. The Office has diverse activities, ranging from facilitating staff exchanges and visiting professors to organizing events and performances and publishing TROPMED Inter News.

Office of the Dean

Called the 'administrative nerve center' of the Faculty, the Office ensures legal compliance, effective financial management and a supportive infrastructure. The Office has a broad range of activities including Procurement, Asset Management and Human Resources.

Office of Educational Administration

Coordinating all necessary efforts to ensure the smooth running of both the Bangkok School of Tropical Medicine and the Practical Nursing School, the Office has many responsibilities, including finance, communications, registration, laboratory management, and extra-curricular activities.

Office of Policy and Strategic Planning

The Office is in charge of planning the strategic development of the Faculty as well as other duties, including institutional policies, data collection, and budgeting.

TM360 Services

A Customer Services office for the Faculty's service recipients, such as the collaborative organizations, and other external stakeholders. This office also takes a lead in the Faculty's intellectual asset management.

Special Focus – the Office of Research Services (ORS)

Mrs. Pornpimon Adams
- Head

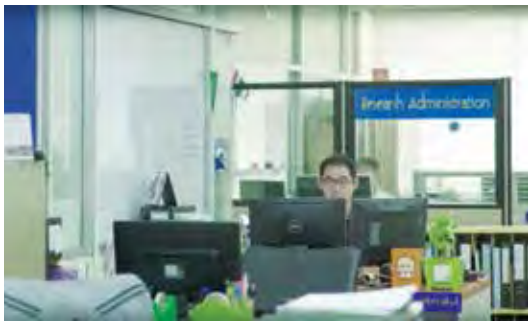
The Office of Research Services supports the research activities of the Faculty in a wide variety of ways – from events and graphic design to grant applications and the Ethics Committee, the ORS provides management, assistance and guidance to help Faculty departments and researchers achieve their full potential.

NEW STRUCTURE IN 2016

Reflecting the broad range of activities and responsibilities covered by 'research services', in late 2016 two new offices were added, the 'Office of Research Integrity and Compliance' and the 'Office of Research Infrastructure and Facilities'. To ensure the maintenance of research quality and the quality of services for researchers, the three Offices are coordinated and interlinked to provide seamless support to Faculty researchers.

NINE KEY AREAS

The work of the ORS can be divided into nine key areas:



Grant management

The ORS supports researchers in finding, applying for and managing domestic and international grants. Among other activities, the team provides support to researchers wishing to submit a grant application; negotiates with sponsors and University authorities; maintains financial records; reviews and edits applications and reports; and maintains the 'Funding Opportunities' blog.

In 2016, there were five successful international sponsored research grant applications, including an award of nearly US$7 million over 5 years from the US Department of Defense. There were 60 domestic grant applications of which 31 received funding, a great success rate.

Ethics Committee

The Committee is responsible for ensuring that the rights, safety, confidentiality, and welfare of research participants are protected, and that each study is planned, conducted, documented, and reported according to regulatory requirements.

In 2016, the Ethics Committee reviewed 113 initial applications from Faculty staff, collaborators and students, and reviewed 199 continuing project applications.

Events management

The Faculty hosts research-related events all year round and the ORS is heavily involved in their organization and management. Events include the annual international conference, the JITMM, as well as smaller events, such as Lunch Talks and Seminars. For more information about JITMM 2016, please see page 100.

In 2016, the ORS organized 19 Lunch and Special Talks as well as taking a key role in running the 16th ThaiTECT annual meeting.

Publications

The ORS graphics design team, as well as English editors and writers, produce the wide range of research-related publications and other printed materials needed by the Faculty. These range from the Annual Review and the JITMM Abstract Book to conference posters and journal submissions.

In 2016, the graphics design team produced seven books, including the Annual Review, Scientific Program Book, four newsletters, 26 posters, and a variety of smaller items, such as invitations and leaflets.

IT and Publication tracking

This team provides support to ensure the ORS IT runs smoothly, and maintains an up-to-date and accurate record of academic publications by Faculty staff, as well as publication analysis. IT support includes maintenance of the Research website and the IT issues that arise daily in a busy office.

In 2016, 311 publications were added to the records. Each entry includes information on the author's department, the journal rank and impact factor, and where it is indexed.

Research training

The Faculty's commitment to a high standard research means regular professional training is a key priority. The ORS has the responsibility to organize training on manuscript and proposal writing, human subject protection, animal use protocol development, and good clinical practice.

In 2016, there were 22 training sessions and workshops.

Translational research

Increasing the amount of translational research at the Faculty is a recent area of focus. The team working on this promotes a Bench-to-Bedside approach by providing funding to researchers to help them develop products from their discoveries, and facilitating their registration with the university's Institute of Innovation and Technology for patent development.

In 2016, the Faculty funded five development projects. The total amount awarded was US$140,000.

Research quality promotion

The Faculty is committed to facilitating and encouraging higher quality publications from its researchers. The team matches researchers with mentors, provides assistance through the publication process, and administers the reward system for authors who publish in a SCImago Q1-ranked journal.

In 2016, six researchers were awarded a cash bonus for publication in a Q1 journal.

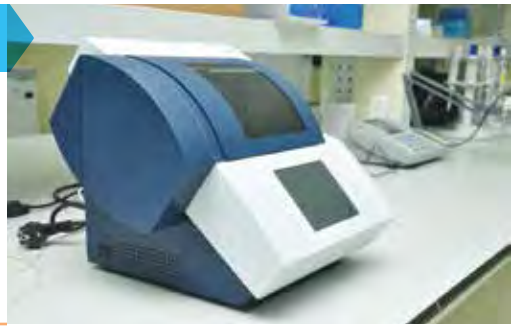
Manuscript editing services

The Faculty has engaged two private companies to provide English language editing support to eligible staff for manuscript publication, usually in journals. Additionally experienced native English speakers in the ORS edit student thesis and thematic paper abstracts and a wide variety of other documents to support their Thai colleagues.

In 2016, the ORS coordinated the outsourced editing of 75 manuscripts, and negotiated agreements with the two service providers.

Central Equipment Unit

Asst. Prof. Poom Adisakwattana
- Head



The Central Equipment Unit has two main functions; providing researchers in the Faculty with laboratory facilities and purified water, and providing specialized equipment plus practical training in its use. The Unit is located on the 6th floor, Chalermprakiat Building and the 8th floor of the Rajanagarindra Building, and is a vital service for many researchers. The facilities and equipment are a shared resource of the Faculty, for the benefit of all.

2016 IN NUMBERS

- 80 different types of equipment
- More than 4400 visits to the laboratory facilities by researchers
- Over 200 pieces of equipment
- 3 new pieces of high-throughput equipment
- 7844 liters of distilled water
- Nearly 2000 liters of deionized water and 375 liters of Milli-Q water
- 12 specialized training sessions

2016 HIGHLIGHTS

The Unit increased the number of high-throughput pieces of equipment in the Unit by adding three new sophisticated machines. These are a new multiplex ELISA machine, a next generation DNA sequencer and also the equipment needed for studying protein-protein interactions. These additions make a wider range of techniques open to our researchers and help advance research in tropical diseases.

There was an increase in the number of visits and users from last year, showing the importance of the Unit to research at the Faculty. Given the role the Unit plays in facilitating research, a new strategy regarding staffing, funding, and purchasing was discussed in 2016 and will be put into place in 2017.

KEY FEATURES OF THE CENTRAL EQUIPMENT UNIT

Range of equipment available

The range of equipment in the Unit allows for both fundamental research to advanced, in Tropical Medicine and other life sciences. A wide variety

of project areas can be catered for, including work with nucleic acids, proteins, imaging, environmental systems, pharmacology, and immunology.

The Unit has a large range of high-level equipment available. The broad range means that no researcher should have to travel to use equipment at another faculty and we are able to support the needs of international grant applications. When research aims require an additional piece of equipment, the Unit's committee will consider the request and make a decision based on a range of factors, including budget and need.

Training available

Training in how to safely, accurately and appropriately use the different equipment in the Unit, is held three times yearly for each item, and on-demand if needed, meaning there is training at least every month. The sessions are open to everyone – students, researchers and academics. Initially, the training is provided by the manufacturer, but over time the training role is taken on by lecturers. Training by lecturers has the added advantage of being tailored towards the needs of Tropical Medicine researchers.

Easy access and short waiting times

The Unit has adequate laboratory facilities and equipment, so waiting times are very short, often within one day. The facilities and most equipment are also very easy to access, as they are available 24 hours a day, via keycard entry.

Tropical Medicine Diagnostic Reference Laboratory (TMDR)

Asst. Prof. Pornsawan Leaungwutiwong
- Head

The Tropical Medicine Diagnostic Reference Laboratory, now entering its third year of operation on the 8th floor of the Hospital for Tropical Diseases, was established to provide analysis and diagnosis of a range of tropical diseases for hospital patients and external organizations. The laboratory also has extensive sample storage facilities.

RESEARCH AREAS

- Dengue
- Malaria
- Leptospirosis
- Toxoplasmosis
- Gnathostomiasis

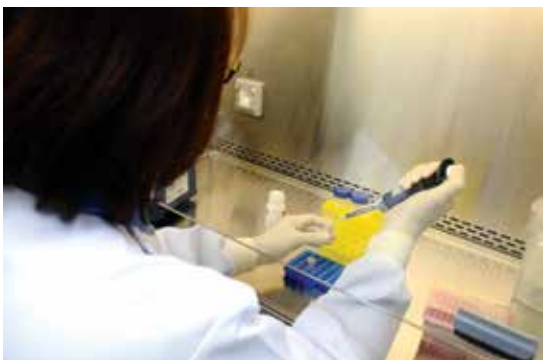
2016 HIGHLIGHTS

- Further preparations for ISO 15189 and 15190 accreditations with the Bureau of Laboratory Quality Standards continued during 2016, with the aim of completing dengue diagnosis accreditation in April 2017, followed by toxoplasmosis and gnathostomiasis later in 2017, and malaria & leptospirosis in 2018.
- Following successful dengue accreditation, the TMDR plans to enter into an MOU with a dengue rapid test company whereby the TMDR will relationship-manage the use of the dengue rapid test kits and the distribution of blinded sample testing in 300 hospitals in Thailand. This MOU has already received ethical committee approval.

BIOBANK

The TMDR also plans to work with BIOPHICS to build a biobank. This will entail building a database of the many samples held by the faculty. Saving time and increasing efficiency. Reference strains of many pathogens endemic to Thailand will also be made available to faculty researchers and other groups in Thailand and internationally.

The reference lab is representative of the many different ways that the innovative work being undertaken at the faculty can benefit both research here, and society as a whole.



Laboratory Animal Science Unit

Dr. Yanin Limpanont
- Head

The Faculty of Tropical Medicine-Laboratory Animal Science Unit (FTM-LAU) ensures laboratory-animal wellbeing, quality of animal research, and the safety of personnel corresponding to ethical and scientific standards. The Unit is responsible for the management research of animal facilities to support both faculty members and outside institutions in their research, testing, and teaching. The Unit is under the Office of Research Services.

FTM-LAU partners with the Animal Care and Use Committee (ACUC) to oversee and routinely evaluate the use of laboratory animals program, review and approve animal use protocols, post-approval monitoring, and inspect facilities and the animal use area regularly. They strictly examine every procedure that affects animals. For instance, when drawing blood, they check if the needle is too big for the mice. They also avoid any circumstances that cause these animals to become stressed. According to Dr. Yanin Limpanont, many factors cause animals to become stressed and stress affects their immune system and hormones, which may affect research outcomes.

2016 HIGHLIGHTS

- In 2016, the Unit provided a total of 12 research and teaching projects to several departments in the Faculty, in the University, and also to external research institutes. They received a high number of projects with different types of research coming from various research groups, including the Faculty of Dentistry and the Ministry of Public Health. With various projects coming, LAU will strive to adapt to these new types of research.

2016 SOCIAL IMPACT

- The Unit arranged a special seminar on "Animal for Scientific Purpose Act, B.E. 2558" in 2016. They invited a speaker from the Institute of Animals for Scientific Purpose Development (IAD) to inform researchers about this newly passed law. One of the requirements of this law is that anyone who works with laboratory animals should have a license, including scientists who work with insects, snails, and other vertebrates. It is required for the researchers to pass protocol reviews although they are not directly using animals in their research. This seminar helped to disseminate this important information to the research community, and LAU continues to heighten awareness among our scientists of this law. Since the law has just been implemented, researchers are being given time and opportunity to comply with the new regulations. For example, IAD organizes training and testing in Bangkok and other provinces to obtain the license.

The Joint International Tropical Medicine Meeting (JITMM)

JITMM 2016 was held on 7-9 December 2016 at the Amari Watergate Hotel, Bangkok. Bearing the theme "Uncover Asian Tropical Medicine", the Meeting highlighted the work of researchers based in Asia and the issues specific to the region.

This international conference, which is held every year, is a great example of different departments and offices in the Faculty working together to achieve something impactful.

The conference is jointly organized by the Faculty, the Parasitology and Tropical Medicine Association of Thailand, the TROPMED Alumni Association, and SEAMEO TROPMED Network, and thus also highlights the Faculty's commitment to collaboration and cooperation.

The conference aims are to -

(1) provide a platform for tropical medicine, global health and infectious diseases researchers and practitioners to share and discuss latest developments and trends;

(2) be a networking and relationship-building occasion for international researchers and practitioners;

(3) encourage promising young researchers by providing an opportunity for them to present their work in an international setting.

The organizers achieve this by selecting a diverse range of topics for the sessions, building social and discussion time into the conference program and providing Travel, Student, and Poster Presentation Awards.

2016 FACTS AND FIGURES

Participants	706	Nationalities	38
Chairpersons and invited speakers	161	Posters	96
Sessions	43	Travel Awards	33

Official Opening of the Discovery Museum of Tropical Diseases

On 11 April the Faculty was greatly honored when Her Royal Highness Princess Maha Chakri Sirindhorn graciously presided over the opening ceremony for the Discovery Museum of Tropical Diseases.

The Museum, which was built to celebrate the 55th Anniversary of the Faculty of Tropical Medicine, comprises six rooms featuring 4D exhibits. The interactive Museum allows visitors to learn details of the Faculty's history and research. Different themes highlight the most important tropical diseases in the region, such as malaria and dengue, their causes, prevention and control methods, and treatments.

The official opening was attended by Clinical Professor Udom Kachinthorn, M.D., President of Mahidol University, and two former Deans of the Faculty, Professor Emeritus Santasiri Sornmani and Professor Emeritus Tan Chongsuphajaisiddhi, M.D.

Faculty personnel welcomed Her Royal Highness Princess Maha Chakri Sirindhorn and celebrated the opening of this fascinating new learning center. Since its opening the Museum has welcomed 728 visitors, including Mahidol University staff, researchers from other universities, and school groups.

2016 Awards

Receiving numerous awards and recognitions for Faculty staff remained consistent in 2016. With a number of awards of Assoc. Prof. Pongrama Ramasoota in January, the year had an impressive start. At the end of the year, Professor Sir Nicholas White was made a Knight Commander of the Order of St Michael and St George for services to tropical medicine and global health by Queen Elizabeth II.

NAME	AWARD	FROM
Pongrama Ramasoota and **Pannamthip Pitaksajjakul** (CEAR)	Invention Award 2016- Outstanding Level	National Research Council of Thailand
Pongrama Ramasoota	Outstanding Alumnus 2016 and Role Model Veterinarian Outstanding Veterinarian	Kasetsart University Veterinary Association of Thailand
Direk Limmathurotsakul **Narisara Chantratita** **Wirongrong Chierakul**	Outstanding Distinction Research Award (Medical Science)	National Research Council of Thailand
Direk Limmathurotsakul	Thailand Frontier Author Award	Office of the Higher Education Commission and Thomson Reuters
Mallika Imwong	Outstanding Technologist Award	Foundation for the Promotion of Science and Technology Under the Patronage of His Majesty the King
Thanat Chookajorn	Scopus Researcher Award in Life Sciences and Agricultural Sciences	Thailand Research Fund
Srisin Khusmith	Excellent Teacher	MU Award
Yupaporn Wattanagoon	Role Model Teacher	Faculty Senate Year 2016-2017
Phaik Yeong Cheah	Thomson Reuters Thailand Frontier Researcher Award in the field of Social Science	Thomson Reuters
Sir Nicholas White	Knight Commander of the Order of St Michael and St George for services to tropical medicine and global health	Queen Elizabeth II

In June and July, five academic staff received rank promotions.

Onrapak Reamtong Aongart Mahittikorn Supaluk Popruk Ronal Enrique Morales Vargas	Assistant Professor
Natthanej Luplertlop	Associate Professor

CALL FOR ABSTRACTS & SYMPOSIA

Joint International Tropical Medicine Meeting 2017 (JITMM2017)

"Tropical Medicine 4.0 Effective *Collaboration* for an Impact on Global Health"

6-8 December 2017
Amari Watergate, Bangkok, Thailand

Organizers and Co-Organizers

- Faculty of Tropical Medicine, Mahidol University
- SEAMEO TROPMED Network
- TROPMED Alumni Association
- The Parasitology and Tropical Medicine Association of Thailand
- Mahidol Oxford Tropical Medicine Research Unit (MORU)
- Department of Disease Control, Ministry of Public Health (MOPH)

Award Sessions

- 1. Sornchai Looareesuwan Medal 2017
- 2. Young Investigator Award
- 3. Best Poster Presentation Award
- 4. Travel Awards

Important Dates

Symposium Proposal Submission Deadline	30 June 2017
Travel Award Application Deadline	31 August 2017
Abstract Submission Closes	31 August 2017
Early Registration Closes	31 October 2017
Pre-Meeting Course "CRISPR-Cas9 Genome Editing Technology in *Plasmodium falciparum*"	5 December 2017

Register now

www.jitmm.com

Join the largest tropical medicine conference in Southeast Asia hosted by The Faculty of Tropical Medicine, Mahidol University

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http://www.tm.mahidol.ac.th

Mahidol University
Faculty of Tropical Medicine

Annual Review 2017

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Publications 2016

List of Publications

1	Abdulla S, Achan J, Yeka A, D'Alessandro U, Adam I, Alemayehu BH, Allan R, Temu EA, Allen EN, Barnes KI, Anvikar AR, Valecha N, Arinaitwe E, Ashley EA, **Carrara VI, McGready R, Nosten F, Lee SJ, White NJ**, Asih PBS, **Awab GR, Dondorp A, Fanello C, Woodrow CJ**, Dahal P, Guerin PJ, Humphreys GS, Moreira C, Nsanzabana C, Price RN, Sibley CH, Stepniewska K*, Bassat Q, Gonzalez R, Baudin E, Checchi F, Espie E, Grandesso F, Nabasumba C, Schramm B, Björkman A, Bompart F, Lameyre V, Bonnet M, Borrmann S, Bousema T*, Cenci F, Cot M, Faucher JF, Kapulu M, Marsh K, Mayxay M, Newton PN, Roper C, Deloron P, Djimde A, Fofana B, Doumbo OK, Sagara I, Dorsey G, Rosenthal PJ, Drakeley CJ, Duparc S, Faiz A, Falade CO, Faye B, Gaye O, Pene M, Filler S, Fogg C, Gansane A, Sirima S, Genton B, Gething PW, Greenwood B, Grivoyannis A, Hamed K, Hatz C, Hay SI, Hodel EM, Hwang J, Patrick Kachur S, Janssens B, van Herp M, Peshu J, Jima D, Juma E, Kager P, Kamya MR, Karema C, Kayentao K, Kiechel JR, Zwang J, Kofoed P, Lell B, Lima N, Mårtensson A, Ursing J, Massougbodji A, Menan H, Menendez C, Mens P, Schallig HDFH, van Vugt M, Meremikwu M, Mockenhaupt FP, Nambozi M, Ndiaye J, Ngasala BE, Andre Toure O, Oguike M, Sutherland CJ, Ogutu BR, Olliaro P, Omar SA, Osorio L, Owusu-Agyei S, Penali LK, Piola P, Premji Z, Ramharter M, Rombo L, Sawa P, Shekalaghe SA, Smithuis F, Sow D, Staedke SG, Sutanto I, Swarthout TD, van den Broek I, Syafruddin D, Sylla K, Talisuna AO, Taylor WR, Ter Kuile F, Tinto H, Tjitra E, Ward SA, Winstanley PA. Gametocyte carriage in uncomplicated *Plasmodium falciparum* malaria following treatment with artemisinin combination therapy: A systematic review and meta-analysis of individual patient data. *BMC Medicine* 2016 May;14:79.
2	Acharya J, Kaehler N, Marahatta SB, Mishra SR, Subedi S, **Adhikari B***. Hidden Costs of Hospital Based Delivery from Two Tertiary Hospitals in Western Nepal. *PLoS One* 2016 Jun; 11(6): e0157746.
3	**Adhikari B**. Organ and human trafficking in Nepal. *Lancet* 2016 May;387(10031): 1907.
4	**Adhikari B*, James N**, Newby G, **von Seidlein L, White NJ, Day NP, Dondorp AM**, Pell C, **Cheah PY**. Community engagement and population coverage in mass anti-malarial administrations: a systematic literature review. *Malar J* 2016 Nov;15: 523.
5	Adhikari S*, Paudel K, Aro AR, Adhikari TB, **Adhikari B**, Mishra SR. Knowledge, attitude and practice of healthcare ethics among resident doctors and ward nurses from a resource poor setting, Nepal. *BMC Med Ethics* 2016 Nov;17: 68.
6	Amaratunga C, Lim P, Suon S, Sreng S, Mao S, Sopha C, Sam B, Dek D, Try V, Amato R, **Blessborn D, Song L**, Tullo GS, Fay MP, Anderson JM, **Tarning J**, Fairhurst RM*. Dihydroartemisinin-piperaquine resistance in *Plasmodium falciparum* malaria in Cambodia: a multisite prospective cohort study. *Lancet Infect Dis* 2016 Mar; 16(3):357-65.

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11	**Assawasuwannakit P***, Braund R, Duffull SB. A framework for quantifying the influence of adherence and dose individualization. *Clin Pharmacol Ther* 2016 Apr;99(4): 452-9
12	**Atwal S, Giengkam S**, VanNieuwenhze M, **Salje J***. Live imaging of the genetically intractable obligate intracellular bacteria *Orientia tsutsugamushi* using a panel of fluorescent dyes. J Microbiol Methods 2016 Nov;130: 169-76
13	Auburn S*, Serre D, Pearson RD, Amato R, Sriprawat K, To S, Handayuni I, Suwanarusk R, Russell B, Drury E, Stalker J, Miotto O, Kwiatkowski DP, **Nosten F**, Price RN. Genomic Analysis Reveals a Common Breakpoint in Amplifications of the *Plasmodium vivax* Multidrug Resistance 1 Locus in Thailand. *J Infect Dis* 2016 Oct;214(8): 1235-42
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18	Baum E*, **Sattabongkot J**, Sirichaisinthop J, Kiattibutr K, Jain A, Taghavian O, Lee MC, Huw Davies D, Cui L, Felgner PL, Yan G. Common asymptomatic and submicroscopic malaria infections in Western Thailand revealed in longitudinal molecular and serological studies: a challenge to malaria elimination. *Malar J* 2016 Jun;15: 333.
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22	**Benjathummarak S**, Kumsiri R, **Nuamtanong S, Kalambaheti T**, Waikagul J, Viseshakul N, **Maneerat Y***. Third-stage *Gnathostoma spinigerum* larva excretory secretory antigens modulate function of Fc gamma receptor I-mediated monocytes in peripheral blood mononuclear cell culture. *Trop Med Health* 2016 Apr;44: 5.
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Presentations 2016

Departments *List of Presentations*

CLINICAL TROPICAL MEDICINE

Oral Presentations (National)

1. Hanboonkunupakarn B, Jeeyapant A, Jittamala P, Tarning J, Day N, Panapipat S, White J.N, Pukrittayakamee S. Comparison of The Electrocardiographic Effects of Chloroquine and Piperaquine. at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016, in Amari Watergate, Bangkok, Thailand.
2. Chan X. H, Hanboonkunupakarn B, Chan S.K, Win Y.N, Jeeyapant A, Nosten F, White N. Using The Surface Electrocardiogram to Evaluate Arrhythmia Risk in Antimalarial Therapy- The Case of Halofantrine at "Joint International Tropical Medicine Meeting 2016 " on 7-9 December 2016, in Amari Watergate, Bangkok, Thailand.

Poster Presentations (International)

1. Wansom T, Akiparat S, Pitisutthitum P, Nitayaphan S, Chariyalertsak S, Eamsila C, Wongwarapat K, Karasavvas N, Sinangil F, Phogat S, Robb M, Michael N, Kim J, Vasan S, O'Connell R,RV 306 Study Group. Vaccine Induced Seroreactivity Induced by ALVAC-HIV and AIDSVAXB/E Prime-boost Vaccinations with Varying Late Booster (RV306. at "HIV Research for Prevention HIVR4P Partnering for Prevention" on 17-20 October 2016, Chicago. U.S.A.
2. Dhitavat J, Phonrat B, Nitayaphan S, Chariyalertsak S,Kaewkungwal J, Khowsroy K, Lapwech W, Kaewthit O, Jarujareet P, Karasavvas N, Akapirat S, Phramtong A, Vasan S, Robb M, Michael N, O'Connell R, Pitisuttithum P, The RV306 Study Group. Characterization of Factors Associated with Mucosal Secretion Collections and Biopsies in RV306 Study at "HIV Research for Prevention HIVR4P Partnering for Prevention" on 17-20 October 2016, Chicago, U.S.A.
3. Sriboonvorakul N. Clinical Mass Spectrometry: Introduction to kinetic study of acidosis in patients with severe malaria at "44th International Symposium on High Performance Liquid Phase Separations and Related Techniques " on 17-16 June 2016, USA
4. Mansanguan C. Health problems and practices of medical card seeking among backpackers while traveling in Thailand at "The 11th Asia Pacific Travel Health Conference (APTHC 2016)" on 1-6 March 2016, Nepal.

Poster Presentations (National)

1. Phumratanaprapin W, Lawpoolsri S, Saelim R, Klinkularb K, Jaurjareet P,Kusulsuk T, Piyaphanee W. Prevalence and Associated Factors for Chronic Kidney Disease in the Thai Elderly Population in Bangkok, Thailand at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016 in Amari Watergate, Bangkok, Thailand.

HELMINTHOLOGY

- None

MEDICAL ENTOMOLOGY

Oral presentations (National)

1.	Dujardin JP, Dujardin S, Kaba D, Guayasamin SS, Villacis AG, Piyaselakul S, Sumruayphol S. and Vargas RM. The maximum likelihood identification based on morphometric data at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016 in Amari Watergate, Bangkok, Thailand
2.	Karl S, Sriwichai P, Marcelo W, Samung Y, Sampaio V, Sumruayphol S, , Nascimento J, Kirakorn K, Lacerda M, Cui L, Sattabongkot J. and Mueller I. Fine scale mapping of mosquito abundance and its relationship to malaria infections at " Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016 in Amari Watergate Bangkok, Thailand
3.	Khamprapa O, Komalamisra N, Attrapadung S. and Morales RE. Updating in container selection and temperature relation of Aedes Mosquito Species in Bangkok Thailand at "5th Burapha University International Conference" on 28-29 July 2016 in, Chonburi, Thailand
4.	Kumlert R, Apiwathnasorn C, Sumruayphol S, Sonthayanon P, Prasartwit A, Paris DH, Anantatat T, Elliott I, Newton P, Morand S. and Sungvornyothin S. Micro-landscape of chigger mite on wild rodent ear leave at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016 in Amari Watergate, Bangkok, Thailand
5.	Morales N, Vargas RM, Jiraphan N. and Samang Y. Geographic profile of salivary gland proteins of Aedes species and its implications for understanding dengue and chikungunya transmission at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016 in Amari Watergate, Bangkok, Thailand.
6.	Sriwichai P, Sattabongkot J, Choochote W, Karl S. and Saeung A. Role of secondary vectors in malaria transmission and implication for malaria elimination in Thailand at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016 in Amari Watergate, Bangkok, Thailand.

Oral presentations (International)

1.	Harun R, Phanphoowong T, Lim LH, Ahmad NW. and Majid MA. Sterilizing effect of ribavirin on male Aedes aegypti (LINN.) at "52nd Annual Scientific Conference of the Malaysian Society of Parasitology and Tropical Medicine" on 2 - 3 March 2016 in Grand Seasons Hotel, Kuala Lumpur, Malaysia.
2.	Ronald Morales-Vargas. Morphometrics of Aedes aegypti in Thailand at "IV International Meeting on Infectious Disease Research and Tropical Medicine" on 13-15 June 2016 in Quito, Ecuador.

Poster presentations (International)

1.	Castillo L, Vargas RE, Tamaki O, Evelyn D, Yolanda M, Sergio M, Thomas E. and Luis C. Chikungunya Behavior in the Dengue Epidemic in Guatemala at "5th Pan-America Dengue Research Network Meeting" on 20-23 April 2016 in Panama.

Departments *List of Presentations*

MEDICAL ENTOMOLOGY (*Continue*)

Poster presentations (International)

2.	Karl S, Sriwichai P, White MT, Kiattibutr K, Cui LW, Yan G, Sattabongkot J. and Mueller I. Malaria transmission on the Thai/Myanmar border: Impact of cross-border migration at "Molecular approach to malaria (MAM) 2016" on 21st – 25th February 2016 in Mantra Beach Resort in Lorne, Australia.
3.	Ronald Morales-Vargas, Leticia Castillo, Tamaki Okabayashi, Evelyn Donis, Yolanda Mencos. Chikungunya Transmission Virological Features in a Dengue Hyperendemic Grounds: Guatemala at "5th Pan-America Dengue Research Network Meeting" on 20-23 April 2016 in Panama.
4.	Sakulpanich A, Attrapadung S. and Gritsanapan W. Adulticidal activity determinations of Stemona collinsae root extract in Blow fly (Chrysomya megacephala) at "6th Asia-Pacific Pharma Congress" on 11-13 July 2016 in Kuala Lumpur, Malaysia.
5.	Sakulpanich A, Attrapadung S. and Gritsanapan W. Larvicidal activity evaluation of Stemona collinsae root extract in third-instar larva of Blow fly (Chrysomya megacephala) at "9th Joint Natural Products Conference" on 24-27 July, 2016 in Copenhagen, Denmark.
6.	Wamaket N, Komalamisra N, Srisawat R. and Attrapadung S. Mosquitocidal activity of castor oil against dengue vector, Aedes aegypti at "Australian Entomology Society 47th AGM and Scientific Conference and Entomological Society of New Zealand 2016 Conference" on 27-30 November 2016 in Melbourne, Australia

Poster presentations (National)

1.	Aupalee K, Taai K, Sriwichai P, Dedkhad W, Hempolchom C, Saingamsook J, Srisuka W, Wijit A. and Saeung A. An allele-pecific polymerase chain reaction assay for the differentiation of Anopheles malaria vectors: members of the dirus complex, minimus complex and maculatus group (diptera: culicidae) at "Seminar on Asian Insect and Biomedical Research 2016" on 8-9th August 2016 in Chiang Mai Orchid, Chiang Mai Province, Thailand
2.	Poolphol P, Sriwichai P, Sattabongkot J, Uttamangkapong S, Kumpitak C, Taai K, Aupalee K, Srisuka W, Saeung A. and Chaithong U. Plasmodium parasites infection in anopheline mosquitoes on the Thailand-Cambodia border area, Nachaluai District, Ubonratchathani Province at "Seminar on Asia Insect and Biomedical Research 2016" on 8-9th August 2016 in Chiang Mai Orchid, Chiang Mai Province, Thailand
3.	Siribat P, Dekumyoy P, Komalamisra C, Sumruayphol S. and Thaenkham U. Molecular identification of Fasciolaspp from Thailand based on PCR-RFLP at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016 in Amari Watergate Bangkok, Thailand
4.	Subsuebwong T, Attrapadung S, Potiwat R, Srisawat R. and Komalamisra N. Insecticidal Activities of Piper retrofractum Extracts Against Aedes aegypti and Culex quinquefasciatus (Diptera: Culicidae) at "The National and International Graduate Conference (NIGRC 2016)" on 15 January 2016 in Khon Kean University, Thailand.

MEDICAL ENTOMOLOGY (*Continue*)

Poster presentations (National)

5.	Sudsawang M, Komalamisra N, Morales RE, Ruangsittichai J, Srisawat R and Attrapadung S. Comparative repellent activity of five herbal essential oil against Aedes aegypti at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016 In Amari Watergate Bangkok, Thailand
6.	Supcharoen P, Komalamisra N, Srisawat R, Phanphoowong T. and Jirakanjanakit N. Effect of temperature on three pyrethroid susceptibility of Aedes aegypti in Nakhonsawan and Rayong Provinces, Thailand at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016 in Amari Watergate Bangkok, Thailand

Book chapters

1.	Ecology of Malaria Vectors and Current (Nongenetic) Methods of Control in the Asia Region. Sriwichai P, Longley R, Sattabongkot J. In: Adelman ZN, editor. Genetic Control of Malaria and Dengue. 1sted. New York: Elsevier Science; 2016. p. 69-77.
2.	Perera-Lecoin M, Luplertlop N, Surasombatpattana P, Liégeois F, Hamel R, Thongrungkiat S, Morales Vargas R, Yssel H and Missé D. Dengue and Chikungunya Coinfection – The Emergence of an Underestimated Threat. In Current Topics in Chikungunya. InTech; Sep.2016. Pp. 67-104.

MICROBIOLOGY AND IMMUNOLOGY

Oral Presentations (National)

1.	Chantratita N. Proteomics in Microbiology: identification, evolution and adaptation of Burkholderia pseudomallei at "11th International Symposium of the Protein Society of Thailand" on 3-5 August 2016 in Chulabhorn Research Institute, Bangkok, Thailand.
2.	Chantratita N. Molecular analysis of extended-spectrum beta-lactamases (ESBL) producing Escherichia coli from patients and environment in Thailand at "Field Observational Research Grant Application, THOHUN meeting" On 30 April 2016 in Siam@Siam Hotel, Pattaya, Thailand.
3.	Worakhunpiset S, Kosoltanapiwat N, Mingkwun R. Assessment of the carcinogenic potential of chemicals release from plastic food containers and packaging through cell transformation assay at "The Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016, in Amari Watergate Bangkok, Thailand.

Poster Presentations (National)

1.	Chantida Praditpol, Yuvadee Mahakunkijcharoen, Tawee Saiwichai, Sathit Pichayangkul, Leera Kittigul and Chakrit Hirunpetcharat. Experimental immunization by Plasmodium yoelii infection and treatment with protective antibody and the adjuvant CpG ODN can protect mice from challenge infection with no interference from regulatory T (Treg) cells induced at "32nd Annual Meeting of The Allergy Asthma & Immunology Association of Thailand" on 31st March 2016 at Centara Grand at Central World, Bangkok, Thailand.

Departments *List of Presentations*

MICROBIOLOGY AND IMMUNOLOGY (*Continue*)

Poster Presentations (National)

2.	Pumeesat P., Muangkaew W., Wongsuk T, Luplertlop N. Apoptosis of Lomentospora prolificans and Scedosporium boydii induced by Farnesol at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016 at Amari Watergate, Bangkok, Thailand . 4. Wongsuk T., Pumeesat P., Luplertlop N. DNA barcoding for identification of Scedosporium apiospermum sensu stricto at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016 in Amari Watergate, Bangkok, Thaiand.
4.	Muangkaew W., Wongsuk T., Luplertlop N. Clinical – mycological study of Dermatophytes from Hospital for Tropical Diseases, Bangkok at "Joint International Tropical Medicine Meeting 2016 on 7-9 December 2016 in Amari Watergate, Bangkok, Thailand.
5.	Singkum P, Bangsai L, Muangkaew W, Tangwattanachuleeporn M, Luplertlop N. The potential role of fungal quorum sensing molecules study: in vivo pathogenesis of Candida albicans using Galleria mellonella model at "Joint International Tropical Medicine Meeting 2016"on 7-9 December 2016. in Amari Watergate, Bangkok, Thailand.
6.	Bangsai L, Singkum P, Muangkaew W, Tangwattanachuleeporn M, Luplertlop N. Tryptophol (Quorum sensing molecules) induced apoptosis in Candida albicans. at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016 in Amari Watergate, Bangkok, Thailand.
7.	Pumeesat P., Muangkaew W., Wongsuk T, Luplertlop N. The infectivity of Zika virus in neuronal cell line: Model to study Zika virus pathogenesis at "Joint International Tropical Medicine Meeting 2016 on 7-9 December 2016 in Amari Watergate, Bangkok, Thailand.
8.	Maknitikul S, Luplertlop N., Georges E. Grau, Sumate Ampawong. Hemozoin correlates to malaria-associated acute respiratory distress syndrome through penumocytic apoptosis mechanism at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016 in Amari Watergate, Bangkok, Thailand.

Poster Presentations (International)

1.	Luplertlop N., Pumeesat P., Muangkaew W., Wongsuk T, Rivero-Menéndez O, Cano Lira JF., Alastruey-Izquierdo A.. Characterization of unidentified Scedosporium spp. isolates from soil of Bangkok, Thailand at "5th International Workshop on Pseudallescheria/Scedosporium infections" on 6-7 October 2016 in University of the Basque Country, Bilbao, Spain.

Book Chapter

1.	Wacharapluesadee S, Jittmittraphap A, Yingsakmongkon S, Hemachudha T. Chapter 53 Nipah Virus. In: Liu D. Molecular detection of animal viral pathogens. 4th eds. Taylor & Francis Crc Press. pp.455-466

MOLECULAR TROPICAL MEDICINE AND GENETICS

Oral Presentations (International)

1. Nguitragool W. Mosquito infectivity of P. vivax at "Frontiers in Malaria Research" on 13 June 2016 in UK.

Poster Presentations (International)

1. Chamchoy K, Pumirat P, Leartsakulpanich U, Boonyuen U. Functional characterization of short-chain dehydrogenase/oxidoreductase (SDR) from potential biothreat agent Burkholderia pseudomallei at "5th UEHAS Symposium" in University of Tokyo, Japan.

Poster Presentations (National)

1. Thiangtrongjit T, Adisakwattana P, Limpanont Y, Chusongsang P, Chusongsang Y, Limsomboon J. and Reamtong O. Identification of Schistosoma mekongi egg immunogens by an immunoproteomics approach at "Joint International Tropical Medicine Meeting 2016" in Amari Watergate Bangkok, Bangkok, Thailand

PROTOZOOLOGY

Oral Presentations (National)

1. Teera K, Aongart M, Rapeepun P, Chantira S, Ruenruetai U, Pongruj R, Supaluk P, Surapol S, Nirundorn H, Akkarin P, Supaporn N, Suntara Na B, Rungson P, Srisuchart M, Sumreng Pl, Chalit K and Yaowalark S. Intestinal parasitic infections among children in the border patrol police school and villagers in rural areas, Thailand at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016, in Amari Watergate, Bangkok, Thailand.
2. Manachit L, Teera K, Aongart M, Emsri P and Yaowalark S. The current situation of intestinal parasitic infections in Luangnamtha, Lao PDR at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016, in Amari Watergate, Bangkok, Thailand.
3. Senpasert O, Teera K, Aongart M, Emsri P and Yaowalark S. Prevalence and risk factors of intestinal helminthic infections in Khong District, Lao PDR at "Joint International Tropical Medicine Meeting 2016" on 7-9 December 2016, in Amari Watergate, Bangkok, Thailand.

Text Book or Book Chapter

1. Radomyos P, Tungtrongchitr A, Popruk S, Watthanakulpanich D, Sirivichayakul C, Mahittikorn A, Krudsood S. Atlas of Medical Parasitology. 2006, 1st ed. Parbpim Ltd. Nonthaburi. .

Departments *List of Presentations*

SOCIAL AND ENVIRONMENTAL MEDICINE

Poster Presentations (National)

1.	Worakhunpiset S. Assessment of carcinogenic potential of chemicals release from plastic food containers and packaging through cell transformation assay at "Joint International Tropical Medicine 2016" on 7-9 December 2016 in Amari Watergate, Bangkok, Thailand.
2.	Khittipop Utila, Athit Phetrak, Doungkamon Phihusut. Chromium (VI) Removal using Adsorbents from Jewelry Industry at "Water, Membrane, Environment and Energy Technology Expo" on 16 September, 2016 in BITEC, Bangkok
3.	Chusongsang P., Chusongsang Y., Limsomboon L., Charoenjai P., Kiatsiri S., Padungcheep S., Numnual S., Tanasarnprasert K., Worakhunpiset S., Limpanont Y. Distribution of Neotricula Aperta, Snail Intermediate Host of Blood Fluke Schistosoma Mekongi, in Mekong River, Thailand at "Joint International Tropical Medicine 2016" on 7-9 December 2016 at Amari Watergate, Bangkok, Thailand.

TROPICAL HYGIENE

Oral Presentations (International)

1.	Jittamala P , Kobylinski K, Tarning J, van der Pluijm R, Hanboonkunupakarn B, Pukrittayakamee S ,Dondorp A , Day N, White NJ. Safety and mosquito-lethal efficacy of ivermectin, ihydroartemisinin-piperaquine, and primaquine : Ivermectin for malaria in Southeast Asia (IMSEA Study, Thailand) at "The American Society of Tropical Medicine and Hygiene (ASTMH) 65th Annual Meeting 2016" on 13-17 November 2016, Atlanta, GA USA
2.	Pan-ngum W , Srichan P , Suwanpakdee S and White L. Combating neglected tropical diseases in Thailand: Multidisciplinary approach at "PRISM Workshop" on 23 September 2016, in Brisbane, Australia.
3.	Srichan P, Lawpoolsri S, Chatchen S, White L, Iamsirithawon S, Pan-ngum W. Spatial epidemiology of dengue fever in Bangkok Thailand: Multidisciplinary approach for optimizing control strategy at "International Congress for Tropical Medicine and Malaria" on 18-23 September 2016, in Brisbane, Australia.

TROPICAL NUTRITION AND FOOD SCIENCE

Oral Presentation (International)

1.	Kwanbunjan K, Panprathip P, Phosat C, N Chumpathat N, Puduang S, Henkel I, Flori Schweigert F J. Association of Retinol Binding Protein 4 and Triglyceride Level in Rural Thais with Type-2 Diabetes Risk at "4th International Conference on Prehypertension, Hypertension and Cardio Metabolic Syndrome" on 3-6 March 2016, in Venice, Italy.

TROPICAL NUTRITION AND FOOD SCIENCE (*Continue*)

Oral Presentation (International)

2.	Phosat C, Panprathip P, Chumpathat N, Puduang S, Kwanbunjan K. Predictive Markers for Coronary Heart Disease and Abnormal Blood-Sugar Levels among a Group of Rural Thais at "4th International Conference on Prehypertension, Hypertension and Cardio Metabolic Syndrome" on 3-6 March 2016, in Venice, Italy.
3.	Arthan D, Optimization For Expression Of Culex Quinquefasciatus Gambicin Antimicrobial Peptide And Its Application at "2nd Peptides and Proteins Symposium", on 8-9 December 2016, in Nanyang Technological University, School of Biological Sciences, Singapore.

Poster Presentations (National)

1.	Nonthasila P, Janvilisri T, Chankhamhaengdecha S, Panbangred W, Aroonnual A. Possible use of Pediococcus pentosaceus as probiotics at "5th Conference on International Biochemistry and Molecular Biology 2016" in Thailand.
2.	Ngamlerst C, Udomkasemsab A, Kongkachuichai R, Kwanbunjan K, Chupeerach C, Limpanont Y, Krasae T, Amnuaysookkasem K, Pornprap C, Prangthip P. The Potential of Mao-Luang (Antidesma bunius) Crude Extract in Decreasing Hypertriglyceride in Rats at "20th World Congress on Clinical Nutrition (WCCN)" on December 14-16, 2016 in Rama Gardens Hotel, Bangkok, Thailand.

TROPICAL PATHOLOGY

Poster Presentations (International)

1.	Kengkoom K, and Ampawong S. In vitro protective effect of phikud navakot extraction on erythrocyte at "32nd Annual Meeting of the Japanese Society of Toxicologic Pathology and the 28th Slide Conference", on 28th-30th January 2016 in Tokyo, Japan.
2.	Maneerat Y, Prasongsukarn K, Benjathummarak S, Dechkhajorn W, Chaisri U. Intersected genes in hyperlipidemia and coronary bypass patients: feasible biomarkers for coronary heart disease at "84th EAS Congress" on May 29-June 1, 2016in Innsbruck, Austria.

Poster Presentations (National)

1.	Ampawong S, Isarangkul D, Suwanmanee S, Aramwit P. Dysmorphic mitochondria and endoplasmic reticulum in type II diabetic rat at "11th Asia-Pacific Microscopy Conference" on May 23 to 27, 2016 in , Phuket, Thailand,
2.	Maknitikul S, Chaisri U, Maneerat Y, Luplertlop N, Ampawong S. Hemozoin Correlates To Malaria-Associated Acute Respiratory Distress Syndrome Through Pneumocytic Apoptosis Mechanism at "Joint International Tropical Medicine Meeting 2016" on , 7-9 December 2016, in Amari Watergate Bangkok, Thailand

Departments

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TROPICAL PEDIATRICS

Oral Presentation(National)

1. Limkittikul K, Hatasingh W, Chansinghakul D, Sabchareon A, Dulyachai W, Frago C, Wartel TA, Langevin E, Gailhardou S, Bouckenooghe A. Long term (6-year) follow-up in Thai children from phase IIB proof of concept efficacy study of CYD-TDV dengue vaccine at "8th Asian Congress of Pediatric Infectious Diseases" on November 8-10, 2016, in Queen Sirikit National Convention Center, Bangkok, Thailand.

Reprint 2016

1. Phanthanawiboon S, Limkittikul K, Sakai Y, Takakura N, Saijo M, Kurosu T. Acute systemic infection with dengue virus leads to vascular leakage and death through tumor necrosis factor-a and tie2/angiopoietin signaling in mice lacking type I and II interferon receptors. PLoS One 2016 February;DOI:10.1371/journal.phone.0148564.
2. Hattasingh W, Pengsaa K, Thisyakorn U. Report on "The 1st workshop on national immunization programs and vaccine coverage in ASEAN countries, April 30, 2015, Pattaya, Thailand. Vaccine 2016;34:1233-40.
3. Plennevaux E, Sabchareon A, Limkittikul K, Chanthavanich P, Sirivichayakul C, Moureau A, Boaz M, Wartel TA, Saville M, Bouckenooghe A. Detection of dengue cases by serological testing in a dengue vaccine efficacy trial; utility for efficacy evaluation and impact of future vaccine introduction. Vaccine 2016 April;34:2707-2712.
4. Sitcharungsi R, Watthanakulpanich D. TAENIA SAGINATA infection in a 14-month-old toddler. Southeast Asian J Trop Med Public Health 2016 May; 47(3):394-398.
5. Sirivichayakul C, Chanthavanich P, Limkittikul K, Siegrist CA, Wijagkanalan W, Chinwangso P, Petre J, Hong Thai P, Chauhan M, Viviani S. Safety and immunogenicity of a combined Tetanus, Diphtheria, recombinant acellular Pertussis vaccine (TdaP) in healthy Thai adults. Human Vaccines & Immunotherapeutics 2016 September;DOI:10.1080/21645515.2016.1234555.
6. Chokephaibulkit K, Sirivichayakul C, Thisyakorn U, Pancharoen C, Boaz M, Bouckenooghe A, Feroldi E. Long-term follow-up of Japanese encephalitis chimeric virus vaccine: Immune responses in children. Vaccine 2016 September;34:5664-9.

CEAR

- None

MVRU

Poster Presentation (International)

1.	Roobsoong W, Puasri P, Adams JH, Sattabongkot J. Field based in vitro invasion inhibition assay of Plasmodium vivax at "Molecular approaches to Malaria 2016" on , 21st - 25th February 2016 in Lorne, Australia.

VTC

Poster presentations (International)

1.	Wansom T, Akiparat S, Pitisutthitum P, Nitayaphan S, Chariyalertsak S, Eamsila C, Wongwarapat K, Karasavvas N, Sinangil F, Phogat S, Robb M, Michael N, Kim J, Vasan S, O'Connell R, RV 306 Study Group. Vaccine Induced Seroreactivity Induced by ALVAC-HIV and AIDSVAXB/E Prime-boost Vaccinations with Varying Late Boosts (RV306) at "HIV Research for Prevention 2016 (HIV R4P)" on 17-21 October 2016 in the Sheraton Grand Chicago, Chicago, USA.
2.	Dhitavat J, Phonrat B, Nitayaphan S, Chariyalertsak S, Kaewkungwal J, Khowsroy K, Lapwech W, Kaewthit O, Jarujareet P, Karasavvas N, Akapirat S, Phramtong A, Vasan S, Robb M, Michael N, O'Connell R, Pitisuttithum P, on behalf of the RV306 Study Group. Characterization of Factors Associated with Mucosal Secretion Collections and Biopsies in RV 306 Study at "HIV Research for Prevention 2016 (HIV R4P)" on 17-21 October 2016 in the Sheraton Grand Chicago, Chicago, USA.

Research in Progress

FACULTY OF TROPICAL MEDICINE RESEARCH PROJECTS FISCAL YEAR 2016

(October2015 - September2016)

No.	Research Title	Grant	Principal investigator
	Department of Clinical Tropical Medicine		
1	Effect of primaquine and its metabolite on the infectivity of *P. falciparum* gametocyte : validation technique	Wellcome Trust of Great Britain	Assoc. Prof. Kesinee Chotivanich
2	Bioequivalence study of 4 mg Perindopril tablets preparations in healthy Thai male volunteers	International Bio Service Co., Ltd	Asst. Prof. Weerapong Phumratanaprapin
3	In Vivo bioequivalence study of 160 mg Fenofibrate film-coated tablet preparation in healthy Thai male volunteers	International Bio Service Co., Ltd	Asst. Prof. Weerapong Phumratanaprapin
4	VNTR-based PCR (VNTR Typing for *Plasmodium falciparum* and *Plasmodium vivax*	Biotech	Assoc. Prof. Mallika Imwong
5	Molecular characterization of drug resistance in the Human malarias	Intermediate level fellowship, Welcome Trust of Great Britain	Assoc. Prof. Mallika Imwong
6	A Phase III Trial of Aventis Pasteur Live Recombinant ALVAC-HIV (vCP1521) Priming with VaxGen gp120 B/E (AIDSVAX B/E) Boosting in HIV-uninfected Thai Adults (Clinic)	The Henry M. Jackson Foundation for The Advancement of Military Medicine, Inc. and The Government of Thailand Ministry of Public Health	Prof. Punnee Pitisuttithum
7	Detection of artemisinin resistance *P. falciparum* : *in vitro*	Mahidol-Oxford Tropical Medicine Research Unit	Prof. Kesinee Chotivanich
8	Safety and efficacy study of Impomea pes-caprae ointment produced by Faculty of Tropical Medicine	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Watcharapong Piyaphanee
9	A Phase III Clinical Trial to Study the Immunogenicity, Tolerability, and Manufacturing Consistency of V503 (A multivalent Human Papillomavirus [HPV] L1 Virus-Like Particle [VLP] Vaccine) in Preadolscents and Adolescents (9 to 15 year olds) with a Comparison to Young Woman (6 to 26 year olds)	Merck & Co., Inc	Prof. Punnee Pitisuttithum
10	Efficacy of moisturizing lotion containing Licochalcone for xerosis in chronic hemodialysis [HD] patients: a double blinded randomized- intra-individual comparator controlled study: a pilot study	Department of Clinical Tropical Medicine and DKSH	Dr. Vorada Choovichian

No.	Research Title	Grant	Principal investigator
Department of Clinical Tropical Medicine (*Continued*)			
11	Novel invention of induced pluripotent stem cells for prediction of drug toxicity in human	Mahidol University (Government Budget)	Asst. Prof. Apichart Nontprasert
12	Incidence and spectrum of health problems among travels to Lao PDR	Department of Clinical Tropical Medicine and Travel Medicine Unit	Asst. Prof. Watcharapong Piyaphanee
13	Rabies exposure risk among foreign backpackers from non-ASEAN countries traveling in Southeast Asia	N/A	Asst. Prof. Watcharapong Piyaphanee
14	The efficacy of antimalarial treatment for *Plasmodium vivax* at Thai -Cambodia border, Thailand.	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Dr. Prakaykaew Charunwatthana
15	Etiology and outcome of acute fever cases attending Hospital for Tropical Diseases	Faculty of Tropical Medicine, Mahidol University	Dr. Viravarn Luvira
16	The efficacy of Moisturizing Lotion with Lichochalcone in treatment of Dryskin and Pmritus in End-Stage renal disease patients	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine	Dr. Vorada Choovichian
17	Plasma antioxidant power and vitamin C level in patients with dengue infection	Faculty of Tropical Medicine, Mahidol University	Dr. Borimas Hanboonkunupakarn
18	The study of chronic kidney disease in elderly	Mahidol University (Government Budget)	Asst. Prof. Weerapong Phumratanaprapin
19	The efficacy antimalarial *Plasmodium vivax* patient	Mahidol University (Government Budget)	Dr. Prakaykaew Charunwatthana
20	Influenza vaccine in elderly	Mahidol University (Government Budget)	Prof. Punnee Pitisuttithum
21	Measurement of hemoglobin in adult patients with dengue viral infection using non-invasive method	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Supat Chamnanchanunt
22	Causative agents of fever among patients presenting at urban Thai hospital	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Udomsak Silachamroon
23	Hemodynamic parameters in adult patients with dengue	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Vipa Thanachartwet
24	Construction and characterization of recombinant full-length enterovirus-71 and coxsackievirus A16 encoding green fluorescences protein (GFP) viruses and its application for pathogenesis studies	Faculty of Tropical Medicine, Mahidol University	Dr. Kobporn Boonnak

No.	Research Title	Grant	Principal investigator
Department of Clinical Tropical Medicine (*Continued*)			
25	Treatment seeking behavoirs of Dengue patients	Faculty of Tropical Medicine, Mahidol University	Dr. Viravarn Luvira
26	The prevalence and correlates of self - reported anxiety and depression: a cross – sectional study in pruritic skin diseases patients	Faculty of Tropical Medicine, Mahidol University	Dr. Vorada Choovichian
27	Novel diagnostic test for communicable tropical enteric pathogen in human to diagnose and exploit epodemiology to helminth, protozoa, viral depatitis E and Salmonella typhi in Bangkok Hospital for Tripical Diseases	Faculty of Tropical Medicine, Mahidol University	Mr. Sant Muangnoicharoen
28	Cardiac evaluational in adult with dengue infention by serial echocardiography	Faculty of Tropical Medicine, Mahidol University	Ms. Chayasin Mansanguan
29	Scrub Typhus Comparision of specificity of various diagnostic tests and kinetics of antibodies response in patients	Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Yupaporn Wattanagoon
30	Effects of hypo-and hyper body temperature (37'C) on the erythocytic stage-development of *Plasmodium falciparum*	Faculty of Tropical Medicine, Mahidol University	Ms. Yutatirat Singhaboot
31	Kinetic study of unmeasured organic acids for the assessment of cause and correlation to acidosis in severe malaria using innovative technique	Faculty of Tropical Medicine, Mahidol University	Dr. Natthida Sriboonvorakul
32	Warning signs of severe dengue and clinical manifestations of different dengue serotype infection in adolescent and adult Thai patients	Mahidol University (Government Budget)	Dr. Borimas Hanboonkunupakarn
33	Incidence, predisposing factors and outcomes of acute kidney injury in dengue infection in adult	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Weerapong Phumratanaprapin
34	Estimating the direct cost and survival benefit of chronic hepatitis C treatment in novel antiviral agent rea, Thailand	Mahidol University (Talent Management)	Asst. Prof. Kittiyod Poovorawan
35	Assessment of acidosis profile in patients with severe malaria using innovative technique	The Thailand Research Fund	Dr. Natthida Sriboonvorakul
36	Change in the miRNA levels among patients with malaria infection	Medical Association of Thailand	Asst. Prof. Supat Chamnanchanunt
37	แอพลิเคชั่นบนสมาร์ทโฟนเพื่อใช้ในการช่วยคำนวณขนาดยาที่ใช้ในการรักษาโรคเขตร้อน รูปภาพวงจรชีวิตของเชื้อก่อโรค การวินิจฉัยและการรักษา	Faculty of Tropical Medicine, Mahidol University	Dr. Sant Muangnoicharoen

No.	Research Title	Grant	Principal investigator
Department of Helminthology			
1	Health status of immigrant children and environmental survey of the children day care centre in Samutsakorn province	Faculty of Tropical Medicine, Mahidol University	Mr. Surapol Sa-nguankiat
2	Identification and characterization of Trichinella spiralis-derived immunomodulatory molecules for novel therapies of inflammatory diseases	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Poom Adisakwattana
3	Experimental Co-infection study of high virulence pathogenic Leptospira in Helminth infected Hamster	Faculty of Tropical Medicine, Mahidol University	Dr. Kittipong Chaisiri
4	Proteomics studies of cytoplasmic membrane proteins expressed on TNF-a induced cholangiocarcinoma cell line	The Thailand Research Fund, Commission on Higher Education and Mahidol University	Asst. Prof. Poom Adisakwattana
5	Development of technique ofr discriminating species and estimating numbers of metacercariae of fish-borne trematodes in an area of mixed infection between Opisthorchiid liver flukes and Heterophyid intestinal flukes by using multiplex real-time PCR	The Thailand Research Fund, Commission on Higher Education and Mahidol University	Asst. Prof. Urusa Thaenkham
6	Production of recombinant Cathepsin L from *Paragonimus pseudoheterotremus* for diagnostic development of paragonimiasis	The Thailand Research Fund and Mahidol University	Dr. Tippayarat Yoonuan
7	Development of multiplex PCR for detection of soil-transmitted helminthes in human stool samples	Faculty of Tropical Medicine, Mahidol University	Ms. Orawan Phuphisut
8	Proteomics and immununomics analysis of excretory-secretory products from infective *Gnathostoma spinigerum* for development of immunodiagnosis	Faculty of Tropical Medicine, Mahidol University	Mrs. Supaporn Nuamtanong
9	Pilot study: community-based comprehensive, multi-disciplinary surveillance of enteric/food and waterborne pathogens in Kanchanaburi and Nakhon Pathom Provinces, Thailand. (Pathogenic intestinal parasites, bacteria, enteric virus and insects)	Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Chalit Komalamisra
10	Transcriptomics and proteomics analysis of potential secretory proteins of *Schistosoma Mekongi* for development of immunodiagmosis and vaccine	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Poom Adisakwattana

No.	Research Title	Grant	Principal investigator
Department of Helminthology (*Continued*)			
11	Study on the effect of phytochemical compounds in Stemona root from Thailand to *Gnathostoma spinigerum*	Agricultural Research Development Agency (Public Organization) : ARDA	Asst. Prof. Urusa Thaenkham
12	Development of multiplex isothermal Polymerase Chain Reaction to Detect *Ascaris lumbricoides*, *Trichuris trichiura* and Hookworms	Faculty of Tropical Medicine, Mahidol University	Mr. Akkarin Poodeepiyasawat
13	Molecular characterization and identification of potential immunomodulatory proteins in excretory-secretory product of *Trichinella spiralis*	Mahidol University (Government Budget)	Asst. Prof. Poom Adisakwattana
14	การศึกษาเบื้องต้นของโรคเขตร้อนในพื้นที่หมู่บ้านทุ่งถ้ำ และหมู่บ้านอูฮู ตำบลแม่อุสุ อำเภอท่าสองยาง จังหวัดตาก	Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Paron Dekumyoy
15	Development of recombinant protein-based immunochromatographic (ICT) diagnosis of Gnathostomiasis	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Poom Adisakwattana
Department of Medical Entomology			
1	Feeding behavior, ecological studies, and molecular identification of *Anopheles dirus* complex in man-habitat	Faculty of Tropical Medicine, Mahidol University	Dr. Sungsit Sungwornyothin
2	Tropic bebavior and ecological characteristics of *Anopheles dirus* complex in man-made habitat	The Thailand Research Fund	Dr. Sungsit Sungwornyothin
3	DNA barcode: the technical challenge for Anopheles mosquito blood meal identification to reverse host from laboratory model versus field.	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Patchara Srivichai
4	Comparison and evaluation of Loop-mediated isothermal amplification (LAMP) and RT-PCR as diagnostic tool for dengue virus detection in Aedes among epidemic area	Faculty of Tropical Medicine, Mahidol University	Dr. Rawewan Srisawat
5	Climate changes effects on mosquito-borne viruses maintenance : Dynamic population of the Vectors of Dengue and Chikungunya viruses	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Ronald Enrique Morales Vargas
6	Effect of temperature on development and insecticide susceptibility of dengue vectors.	Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Narumon Komalamisra

No.	Research Title	Grant	Principal investigator
Department of Medical Entomology (*Continued*)			
7	Application of morphometrics and molecular biology to identify *Ae. scutellaris* in Thailand	Faculty of Tropical Medicine, Mahidol University	Dr. Suchada Samruaypol
8	Quantitative transovarial tranmission to dengue-2 virus in both sexes of dark- and pale-form *Ae. Aegypti*	Faculty of Tropical Medicine, Mahidol University	Mr. Teerawit Panpoowong
9	The effects of different temperatures on the interaction between Aedes Mosquitoes and Dengue Virus especially Viral Susceptibility, Dissemination, Transmission and Disease Pathogenesis.	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Supatra Thongrungkiat
10	*Plasmodium knowlesi* the fifth species of human malaria : investigaton for mosquito vector in Thailand	The Thailand Research Fund, Commission on Higher Education and Mahidol University	Asst. Prof. Patchara Srivichai
11	Exploring transmission-blocking vaccine target in *Anopheles dirus* for inhibition of malaria transmission	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Patchara Srivichai
12	Production and characterization of rhamnolipid, biosurfactant, trom *Pseudomonas aeruginosa* B189 for mosquitoes control	Faculty of Tropical Mecicine, Mahidol University	Dr. Siriluck Attrapadung
13	The study of mosquito vectors emphasis on Lorrainea, Sukusea and Stegomyia inhabiting mangrove forest of Thailand by morphometrics and molecular biology	Mahidol University	Dr. Suchada Sumruaypol
14	Detection of viral disease and molecular distinguish of the natural Bat Bug species from the cave	Mahidol University	Asst. Prof. Rutcharin Potiwat
15	Stability enhancement of mosquito repellency from *Zngthoxy limonella* oil by using encapsulation technique	Mahidol University	Dr. Siriluck Attrapadung
16	Identification of transmission-blocking compounds from the Malaria Box	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Dr. Suchada Sumruaypol
17	Herbal Mosquito Repellents Masts	Faculty of Tropical Mecicine, Mahidol University	Mrs. Keawmala Palakul
18	A surveillance of Bat Bugs species and Discovery of genetic relationships among human Bed Bug	Faculty of Tropical Mecicine, Mahidol University	Asst. Prof. Rutcharin Potiwat
19	Study of the physiological sensitivity to chemical stimuli in different species of mosquitoes	Kao Corporation, Japan	Assoc. Prof. Narumon Komalamisra

No.	Research Title	Grant	Principal investigator
Department of Medical Entomology (*Continued*)			
20	Mekong Outdoor Transmission Initiative (MOTIve) : Evaluation of the protective efficacy of premethrin-treated clothing in the laboratory	Malaria Consortium, UK	Assoc. Prof. Narumon Komalamisra
21	The investigation of the factors contributing to high dengue incidence in Mae Tan sub-district, Thasongyang district, Tak province	Faculty of Tropical Mecicine, Mahidol University	Asst. Prof. Patchara Srivichai
Department of Microbiology and Immunology			
1	Associations between genetic polymorphisms, innate immune responses and outcomes from sepsis in Thai patients with melioisosis and *S. aureus* infection	Wellcome Trust of Great Britain	Assoc. Prof. Narisara Chantratita
2	The role of treahalase in stress response and virulence of *Burkholderia pseudomallei*	The Thailand Research Fund, Commission on Higher Education and Mahidol University	Asst. Prof. Muthita Vanaporn
3	Preparation of fully human monoclonal antibodiy to enterotoxin A (SEA) of *Staphylococcus aureus* by using phage display technology for further developmetn to therapuetic antibody	The Thailand Research Fund, Commission on Higher Education and Mahidol University	Asst. Prof. Nitaya Indrawattana
4	Role of cycle inhibiting factor (Cif) in host protein expression and prevalence of Cif in *Burkholderia pseudomallei*	The Thailand Research Fund, Commission on Higher Education and Mahidol University	Asst. Prof. Pornpan Pumirat
5	Surveillance of emerging and re-emerging aoonotic diseases in wildlife and domestic animals in the areas of forest, residences, and agricultures interface in Thailand	Faculty of Tropical Mecicine, Mahidol University	Asst. Prof. Nathamon Kosoltanapiwat
6	Immunoproteomics for identification of MHC class I-restricted epitopes of enterovirus 71	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Nathamon Kosoltanapiwat
7	Ultrasonic observation and 'Omics technological application for invasive virulence factors identification, cytokines and secreted extracellular reactive oxygen species expression that provokes the pathogenesis of *Trichophyton rubrum* in primary dendritic cells and continuous monocyte derived cells model	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Natthanej Luplertlop

No.	Research Title	Grant	Principal investigator
Department of Microbiology and Immunology (*Continued*)			
8	The antibiotic resistance profile and its mechanisms in *Escherichia coli* and *Klebsiella pneumoniae* from hospital isolations in 2007-2012	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Muthita Vanaporn
9	Detection of hepatitis E virus in raw pork, pig liver and pork products	Faculty of Tropical Medicine, Mahidol University	Mr. Narin Thippornchai
10	Development of monoclonal antibody-based dot-blot ELISA for the detection of Listeria monocytogenes in food	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Nitaya Indrawattana
11	Determination of antibody titer among children vaccinated with heptavalent pneumococcal conjugate vaccine by Opsonophagocytic Killing Assay	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Tareerat Kalambaheti
12	The potential implications of Nisin in common dermatological problems on the *in vitro* characterizations	Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Natthanej Luplertlop
13	Variation of *Burkholderia pseudomallei* lipopolysaccharide and impact on innate immune response	Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Narissara Chantratita
14	Role of biofilm in antifungal drug resistance in *Aspergillus fumigatus* and other species	Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Natthanej Luplertlop
15	Analysis of protein profiling, virulence and immune activation of *Burkholderia pseudomallei* isolated from blood culture during the passages	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Pornpan Pumirat
16	Determinants of Outcome and Recurrent Infections in Melioidosis	NIH	Assoc. Prof. Narisara Chantratita
17	Common Dermatophytic infection and their in vitro anti-fungal susceptibility in patients attending at the Dermatological clinic, Tropical Medicine hospital, Faculty Tropical medicine, Mahidol university	Faculty of Tropical Medicine, Mahidol University	Mrs. Watcharamat Muangkaew
18	Naturally acquired antibodies to *P. vivax* Duffy binding protein among malaria endemic populations in Thailand	Faculty of Tropical Medicine, Mahidol University	Mrs. Jarinee Tongshoob
19	Pseudallescheria/Scedosporium complex spp.in Bangkok, Thailand : From saprophytic fungi to invasive human mycoses	Center of Emerging and Neglected Infectious Disease : CENID, Mahidol University	Assoc. Prof. Natthanej Luplertlop
20	Determination of genetic variations of bovine enterovirus and its potential to cause diseases	Mahidol University	Asst. Prof. Nathamon Kosoltanapiwat

No.	Research Title	Grant	Principal investigator
Department of Microbiology and Immunology (*Continued*)			
21	In vitro study : The potential rold of N-myristoyltransferase in Dengue virus infectivity and replication enhancement	Mahidol University	Assoc. Prof. Natthanej Lublertlop
22	Novel approach for combating a clique of multi-drug resistant "ESKAPE" : a *Pseudomonas aeruginosa* model	The Thailand Research Fund	Asst. Prof. Nitaya Indrawattana
23	การศึกษาความสัมพันธ์ของ Spitzenkorper กับ Candida albicans ในห้องปฏิบัติการ	The National Research Concil of Thailand	น.ส.พจมาน ผู้มีสัตย์ (นศ.ป.เอก) อ.ที่ปรึกษา : ผศ.ดร.นพ.นัฏฐเนศวร์ ลับเลิศลบ
24	ผลของการเติมสารสังเคราะห์ควอรัมเซนซิงโมเลกุลจากเชื้อราต่อการสร้างไบโอฟิล์มของเชื้อ *Aspergillus fumigatus*	The National Research Concil of Thailand	นายธันวา วงษ์สุก (นศ.ป.เอก) อ.ที่ปรึกษา : ผศ.ดร.นพ.นัฏฐเนศวร์ ลับเลิศลบ
25	The pathogenesis of Dengue and Chikungunya coinfection in Thailand: clinical, immunological and entomological studies (DENCHICTHAI)	National institute of hygiene and epidemiology-The Institut de Recherche pour le developpement (IRD)	Assoc. Prof. Natthanej Lublertlop
26	Development of immunochromatographic test for the detection of Listeria monocytogenes in food	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Nitaya Indrawattana

Department of Molecular Tropical Medicine and Genetics			
1	The study of biotransformation of oseltamivir analogue by Carboxylesterase 1 (CES1)	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Usa Dokprom Boonyuen
2	The qualification and quantification of proteins of mefloquine-sensitive and mefloquine-resistant Plasmodium falciparum using mass spectrometry.	Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Onrapak Riumthong
3	Optimization of protein sample preparation techniques for proteomic study of *Plasmodium vivax* in liver stage	Faculty of Tropical Medicine, Mahidol University	Dr. Supachai Topanurak
4	Development of Antigens-base immunodiagnosis test for acute febrile illness caused by *Leptospira spp.*	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Santi Maneewatchararangsri
5	Identification of mass fingerprinting of Leptospira spp. Using matrix assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS)	The Thailand Research Fund, and Mahidol University	Asst. Prof. Piengchan Sonthayanon
6	Prevalence of pathogenic *Leptospira spp.* from rodents in Thailand	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Piengchan Sonthayanon

No.	Research Title	Grant	Principal investigator
Department of Molecular Tropical Medicine and Genetics (*Continued*)			
7	Effect of additional mutation (Mahidol) in G6PD Viangchan	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Usa Dokprom Boonyuen
8	Molecular epidemiology of drug resistance in human malarias in Thailand	Mahidol University (Government Budget)	Assoc. Prof. Mallika Imwong
9	Discoery of Lipid Acquisition Machinery of Plasmodium in Liver Stage with Host-Parasite Interactome Technology for New Antimalarial Targeting	National Science and Technology Development Agency (NSTDA)	Dr. Supachai Topanurak
10	Development of magnetic nanoparticles as the prototype for the enrichment of *Leptospira spp.*	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Dr. Charin Thawornkuno
11	Molecular characterization of antigenic surface protein genes of *Plasmodium malariae*	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Naowarat Tanomsing
12	Discovery of essential host factors for the development of *P. falciparum* and *P. vivax* in liver stage	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Dr. Supachai Topanurak
13	Expression profiling of reticulocyte binding proteins of *Plasmodium vivax*	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Wang Nguitragool
14	Elucidating the function of plasmodium perforin-like proteins in infection of Anopheles mosquitoes	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Wang Nguitragool
15	Transfection of liver-stage *Plasmodium vivax* for studies of parasite biology, drug screening, and vaccine development	The Thailand Research Fund	Asst. Prof. Wang Nguitragool
16	Identification of novel biomarker genes for cholangiocarcinoma detection	Faculty of Tropical Medicine, Mahidol University	Dr. Panee Chaksangchaichot
17	Molecular detection and typing of *Orientia tsutsugamushi* in chigger mites from wild-caught rodents in Thailand	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Piengchan Sonthayanon
18	The identification and characterization of the target proteins of a candidate antimalarial drug	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Onrapak Riumthong
19	Elucidating the mechanism of reticulocyte-specific invasion by *Plasmodium vivax*	Wellcome Trust of Great Britain	Asst. Prof. Wang Nguitragool
20	Biochemical characterization of the most common G6PD variants in Thailand	Mahidol University	Asst. Prof. Usa Dokprom Boonyuen

No.	Research Title	Grant	Principal investigator
Department of Molecular Tropical Medicine and Genetics (*Continued*)			
21	Roles of the cytoplasmic domain of reticulocyte binding protein homologs of malaria parasites	Mahidol University : Talent Management	Asst. Prof. Wang Nguitragool
22	Use of mapl and csp DNA sequences as genetic markers for *P. ovale curtisi* and *P. ovale wallikeri*	Mahidol University : Talent Management	Asst. Prof. Naowarat Saralamba
23	Characterization of IgM/IgG-specific LipL32 immunodominant epitopes of *Leptospira spp.*	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Santi Maneewatchararangsri
24	Identification of host proteome caused by human papillomavirus (HPV) E7 protein interaction for host-virus interaction study	Faculty of Tropical Medicine, Mahidol University	Dr. Supachai Topanurak
25	Functional Characterization of BPSS2232, a putative tubulin acetyltransferase (TAT), from *Burkholderia pseudomallei*	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Usa Dokprom Boonyuen
26	Identification of Specific Biomarker Genes for Separation Intrahepatic Cholangiocarcinoma Subtype	Faculty of Tropical Medicine, Mahidol University	Ms. Thitiluck Swangsri
27	Determinaton of whole antigen profiles in *Schistosoma mekongi* eggs by proteomics approach	Faculty of Tropical Medicine, Mahidol University	Ms. Tipparat Thiangtrongjit
28	Production of ELISA test kit for quantifying human collagen alpha-1 (XI) chain of Thai breast cancer patient	Faculty of Tropical Medicine, Mahidol University	Ms. Nonglucksanawan Ritthisunthorn
29	Monthly dynamics of five-species malaria infection on the Thai-Myanmar border	Center of Emerging and Neglected Infectious Disease : CENID, Mahidol University	Asst. Prof. Wang Nguitragool
30	A novel approach for treatment of human filariasis : a search for immunomodulatory molecules of *Brugia malayi* and restoration of host immunity	Thailand Research Fund	Asst. Prof. Onrapak Riumthong
31	Functional assessment of G6PD variants found in Thailand	Thailand Research Fund	Asst. Prof. Usa Dokprom Boonyuen
32	การทำงานและโครงสร้างสามมิติของเอนไซม์ดีไฮโดรจีเนส ออกซิโดรีดักเทสสายสั้นจากเชื้อเบอโคลเดอเรีย สูโดมัลลิไอ	National Science and Technology Development Agency (NSTDA)-TGIST	น.ส.กมลวรรณ แซ่มซ้อย (นศ.ป.เอก) อ.ที่ปรึกษา : อ.อุษา บุญยืน
33	Roles of the N-terminal domain of *Plasmodium vivax* reticulocyte binding proteins, an investigation using transfenic *Plasmodium knowlesi*	National Science and Technology Development Agency (NSTDA)	Ms. Sutarinee Ngenna (Advisor : Asst. Prof. Wang Nguitragool)

No.	Research Title	Grant	Principal investigator
Department of Molecular Tropical Medicine and Genetics (*Continued*)			
34	Phosphoproteomic analysis of male and female *Schistosoma mekongi* worms	Mahidol University	Asst. Prof. Onrapak Riumthong
35	Membrane translocating human ScFv antibodies specific to pathogenic Leptospira adhesins with adhesion inhibitory activity	The Thailand Research Fund	Asst. Prof. Santi Maneewatchararangsri
36	Structural and functional studies of Leptospira lipopolysaccharide (LPS) translocon compleses and the interaction of the bacteria and host cells	British Council (NEWTON FUND : Researcher Links Travel Grant 2015-2016)	Asst. Prof. Santi Maneewatchararangsri
37	Molecular and in vitro surveillance of artemisinin combination therapy (ACT) partner drug efficacy in the Greater Mekong Subregion-MIVS-ACT	EXPERTISE FRANCE	Assoc. Prof. Mallika Imwong
38	The Development of loop-mediated isothermal amplification (LAMP) for diagnosis of scrub typhus at Tha Song Yang Hospital, Tak, Thailand	Faculty of Tropical Medicine, Mahidol University	Dr. Sasipa Tanyaratsrisakul
39	การพัฒนาต่อยอดชุดตรวจวินิจฉัยแอนติบอดีชนิด IgG ต่อโปรตีนรีคอมไบแนนจำเพาะของเชื้อ เลปโตสไปราด้วยเทคนิคอิไลซา สำหรับโรคเลปโตสไปโรซิส	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Santi Maneewatchararangsri
Department of Protozoology			
1	*Toxoplasma gondii* genotyping in domestic and wild felids in Thailand	Commission on Higher Education	Prof. Yaowalark Sukthana
2	PCR assays for detection of *Toxoplasma gondii* in Thai commercial meat products	Mahidol University	Ms. Rachatawan Chiabchalard
3	Identifying the Sources of Environmental Contamination by Cryptosporidium	The Thailand Research Fund	Prof. Yaowalark Sukthana
4	Conmparative proteomic study of *Entamoeba histolytica* and *Entamoeba moshkovskii*; causative agent of muman amoebiasis	The Thailand Research Fund, Commission on Higher Education and Mahidol University	Dr. Saengduen Moonsom
5	Development Technique of Differentiation of Free-living Amoebae	The Thailand Research Fund	Prof. Yaowalark Sukthana
6	The Role of marine bivalves as a sentinel organism for monitoring food-and water-borne Protozoa-related diseases in coastal waters	The Thailand Research Fund	Prof. Yaowalark Sukthana
7	The Detection and Quantification of *Toxoplasma gondii* Captive Wildlife in Thailand	Department of Protozoology	Asst. Prof. Ongart Mahitikorn

No.	Research Title	Grant	Principal investigator
Department of Protozoology (*Continued*)			
8	Development of a loop-mediated isothermal amplification (LAMP) for rapid identification of *Naegleria fowleri*	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Ongart Mahitikorn
9	Development of nested PCR and real-time PCR assays for diagnosis of *Plasmodium knowlesi*	Faculty of Tropical Medicine, Mahidol University	Mr. Pongrut Ratprasert
10	Development of differential diagnosis of *Entamoeba histolytica*, *E. moskovskii*, and *E. dispar* by specific monoclonal antibodies	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Dr. Saengduen Moonsom
11	Antiprotozal acitivity of essential oil from Thai Medical plants against *Giardia duodenalis*	Mahidol University	Asst. Prof. Supaluk Popruk
12	Molecular characterization of Plasmodium falciparum DNA-3 methyladenine glycosylase as a new antimalarial drug target	Mahidol University (Government Budget)	Assoc. Prof. Porntip Petmitr
Department of Social and Environmental Medicine			
1	Development of Microorganism Killing Activity for Electronic Air Filter	The Thailand Research Fund	Assoc. Prof. Pongrama Ramasoota
2	Development of monoclonal antibody specific to 3 ABC protein of foot and mouth disease virus using phage display technology	The Thailand Research Fund	Assoc. Prof. Pongrama Ramasoota
3	Effect of climate change on Gastro-intestinal Infectious Diseases	The Commission on Higher Education (National Research University)	Asst. Prof. Suwalee Worakunpiset
4	Variable of infection rate of intermediated host of liver fluke, *Opisthorchis viverrini* at endemic areas in Chacheongsao Province, Thailand.	Department of Social and Environmental Medicine, Faculty of Tropical Meidicine, Mahidol University	Mrs. Yupa Chusongsang
5	Therapeutic and diagnostic human monoclonal antibodies against Chikungunya virus.	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Pannamtip Pitaksajakul
6	Recombinant human IgG monoclonal antibody production with cross-neutralizing activity to all serotypes of Dengue virus	The Thailand Research Fund, Commission on Higher Education and Mahidol University	Asst. Prof. Pannamthip Pitaksajjakul
7	Genetic variation of High susceptible and low susceptible snail intermediate host Neotricula aperta, from Mekong River, Nong Khai to blood fluke *Schistosoma mekongi*	The Thailand Research Fund, Commission on Higher Education and Mahidol University	Asst. Prof. Yanin Limpanon

No.	Research Title	Grant	Principal investigator
Department of Social and Environmental Medicine (*Continued*)			
8	Epitope mapping of Neutralizing human monoclonal antibody against Dengue viruses	The Thailand Research Fund and Mahidol University	Assoc. Prof. Pongrama Ramasoota
9	Dengue vaccine development based on epitope from human monoclonal antibodies that nutrallized all 4 serotype of Dengue virus	National Research Consil of Thailand (NRCT)	Assoc. Prof. Pongrama Ramasoota
10	Social and Environmental Factors affecting The Preventive Behaviors of Dengue Hemorrhagic Fever	Faculty of Tropical Medicine, Mahidol University	Mr. Wiwat Wanarangsikul
11	Health Risk Assessment of Heavy Metals Contamination in the Environment near Industrial Estate Area, Ayutthaya	Faculty of Tropical Medicine, Mahidol University	Ms. Rachaneekorn Mingkhwan
12	Distribution and seasonal variation of *Neotricula aperta*, snail intermediate host of blood Fluke *Schistosoma mekongi*, along Mekong River, Thailand	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Yanin Limpanon
13	Reduction of ADE activity for neutralizing human monoclonal antibody against dengue virus by Fc modification	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Pannamthip Pitaksajjakul
14	Assessment of the carcinogenic potential of chemicals release from plastic food containers and packaging through cell transformation assay	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Suwalee Worakunpiset
15	Critical Proteins of Non-Alcoholic Fatty Liver Disease After Bisphenol A Exposure	Faculty of Tropical Medicine, Mahidol University	Dr. Prapin Tharnpoophasiam
16	Development of Rapid Immunochromatography strip test for Dengue virus	The Thailand Research Fund	Asst. Prof. Pannamthip Pitaksajjakul
17	Development of competitive ELISA test for differentiate between foot and mouth disease infected animal from vaccinated animal	The Thailand Research Fund	Assoc. Prof. Pongrama Ramasoota
18	Strengthen Research Collaboration on Dengue between Thailand and Lao PDR	Mahidol University (AEC)	Assoc. Prof. Pongrama Ramasoota
19	Contstruction of scFv antibody phage library and selection of dengue virus-specific monoclonal antibodies using phage display technology	Faculty of Tropical Medicine, Mahidol University	Ms. Hathairad Hananantachai
20	การศึกษาศักยภาพการรองรับมลพิษ (Carrying Capacity) ในเขตพื้นที่แหลมฉบัง-ศรีราชา-อ่าวอุดม	Thaioil Public Company Limited (TOP)	Assoc. Prof. Kraichat Tantrakarnapa

No.	Research Title	Grant	Principal investigator
Department of Social and Environmental Medicine (*Continued*)			
21	พัฒนาตัวชี้วัดด้านอนามัยสิ่งแวดล้อมจากการเปลี่ยนแปลงสภาพภูมิอากาศ	กรมอนามัย กระทรวงสาธารณสุข	Assoc. Prof. Kraichat Tantrakarnapa
22	Dynamic Modeling of Loading Capacity for Fecal Coliform Bacteria of the Mekong River in Chaing Khong City, Chiang Rai Province	Asia Research Center, Chulalongkorn University	Asst. Prof. Voranuch Wangsuphachart
23	การศึกษาและจัดทำฐานข้อมูลระดับเสียงในระยะก่อสร้างโครงการท่อส่งก๊าซธรรมชาติเส้นที่ 4 (ระยอง-แก่งคอย) พร้อมแบบจำลองแสดงความสัมพันธ์ระหว่างผลกระทบด้านเสียงและพื้นที่อ่อนไหวในพื้นที่โครงการ	Entic Company Limited, Thailand	Assoc. Prof. Kraichat Tantrakarnapa
24	Development and Implementation of the Climate Protection Policy in Thailand	German International Cooperation (GIZ)	Assoc. Prof. Kraichat Tantrakarnapa
25	Support to the Development and Implementation of the Thai Climate Change Policy	German International Cooperation (GIZ)	Assoc. Prof. Kraichat Tantrakarnapa
26	โครงการจัดทำบัญชีก๊าซเรือนกระจกและมาตรการลดก๊าซเรือนกระจก ภาคส่วนกระบวนการอุตสาหกรรม	Global Environment Facility : GEF (กองทุนสิ่งแวดล้อมโลก) รับเงินผ่านทาง ม.ธรรมศาสตร์	Assoc. Prof. Kraichat Tantrakarnapa
27	Development of procedures for laboratory maintaining of blood fluke (*Schistosoma mansoni*) life cycle in snail intermediate host (*Biomphalaria glabrata*)	Faculty of Tropical Medicine, Mahidol University	Mrs. Yupa Chusongsang
28	Development of technique for *Schistosoma mekongi* infection in Laboratory mice	Faculty of Tropical Medicine, Mahidol University	Mr. Phiraphol Chusongsang
29	Environmental Variation of Particulate Matters in Respiratory Disease in the Northern part of Thailand	Mahidol University (Postdoctoral Fellowship Program)	Assoc. Prof. Kraichat Tantrakarnapa/ Dr.Apaporn Ruchiraset (Post doc)
30	Enhancement of Therapeutic Human Monoclonal antibodies against Dengue diseases using phage display technique	Mahidol University (Government Budget)	Assoc. Prof. Pongrama Ramasoota
31	Dengue vaccine development based on epitope from human monoclonal antibodies that nutrallized all 4 serotype of Dengue virus	NRCT (Joint Research Program)	Assoc. Prof. Pongrama Ramasoota
32	Longitudinal studies and maturation pathway of human B cell antibody sequences among different phases of dengue patients	Thailand Research Fund	Asst. Prof. Pannamthip Pitaksajjakul

No.	Research Title	Grant	Principal investigator
Department of Social and Environmental Medicine (*Continued*)			
33	Production of Therapeutic human monoclonal antibodies against Dengue virus at Industrial scale	Thailand Research Fund	นายพงษ์พันธุ์ สุวรรณชาติ (นศ.ป.โท) อ.ที่ปรึกษา : รศ.ดร.พงศ์ราม รามสูต
34	GeoHealth Thai Platform (GeoHTP): Towards a Network to Gather Expertise, Knowledge and Resources in Health Geography	The Commission on Higher Education	Assoc. Prof. Kraichat Tantrakarnapa
35	Biodiversity and genetic variation of gastropods in Mekong River, Thailand: implementation for environmental monitoring	Mahidol University (Government Budget)	Asst. Prof. Yanin Limpanon
36	Production of Therapeutic human monoclonal antibodies against Dengue virus at Industrial scale	The Thailand Research Fund	นายพงษ์พันธุ์ สุวรรณชาติ (นศ.ป.โท) อ.ที่ปรึกษา : รศ.ดร.พงศ์ราม รามสูต
37	Study of community water, sanitation and hygiene associated with diarrhea infection: A case study of Tha Song Yang District, Tak Province, Thailand	Faculty of Tropical Medicine, Mahidol University	Dr. Athit Phetrak

Department of Tropical Hygiene			
1	A phase II,randomized, open label, multicentre study to assess the antimalarial efficacy and safety of arterolane (RBx11160) maleate and piperaquine phosphate coadministration and Coartem in patients with acute uncomplicated *Plasmodium falciparum* malaria	Ranbaxy Laboratories Ltd., India	Prof. Srivicha Krudsood
2	Proteomics characterization of *Aedes aegypti*	Bourse Scholarship, IRD, France	Assoc. Prof. Natthanej Luplerdlop
3	Evaluation of fosmidomycin, when administered concurrently to adult subjects with acute uncomplicated Plasmodium malaria	Jomaa Pharma GmbH, Hamburg, Germany	Prof. Srivicha Krudsood
4	Th1 and Th2 cytokine expression in common mosquito borne infected samples in Thailand	The Thailand Research Fund	Assoc. Prof. Natthanej Luplerdlop
5	Role of phosphoinositide 3-kinase and matrix metalloproteinases induce chronic arthritis in Chikungunya pathogenesis	Faculty of Tropical Medicine, Mahidol University	Ms. Suntaree Sangmukdanun

No.	Research Title	Grant	Principal investigator
Department of Tropical Hygiene (*Continued*)			
6	Molecular techniques for identification of protective epitope and pathogenic peptides of LipL32 protein of *Leptospira spp.*	The Thailand Research Fund	Asst. Prof. Santi Maneewatchararangsri
7	Dynamics of microscopic and submicroscopic *P. falciparum* gametocytemia after early treatment of artesunate-mefloquine	The Thailand Research Fund	Asst. Prof. Saranath Lawpoolsri
8	Production of human VL complementary single-variable domain that interfere and/ or neutralize IL-17 biological functions	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Santi Maneewatchararangsri
9	Investigating Urine Protein Markers in Acute Renal failure Complicating Severe Malaria	The National Research Concil of Thailand	Assoc. Prof. Natthanej Lublertlop
10	Diagnosis of ARF in severe malaria by neutrophil gelatinase-associated lipocalin (NGAL) and liver fatty acid binding proteins (L-FABP)	The National Research Concil of Thailand	Prof. Srivicha Krudsood
11	Surveillance and spatial-temporal distribution of Chikungunya and its impact among residents living in an area along Thai-Myanmar border of Ratchaburi province.	Faculty of Tropical Medicine, Mahidol University	Mr. Pitak Wutisen
12	Effect of land use change on malaria transmission in Suanphung district Ratchaburi.	Faculty of Tropical Medicine, Mahidol University	Mr. Patiwat Sa-angchai
13	Forecasting model of malaria incidence with climate variables: a case study in Ratchaburi, Thailand.	Mahidol University	Dr. Ngamphol Soonthornworasiri
14	Study of lipopolysaccharide and biofilm formation in relapsing meliodosis	The Thailand Research Fund, Commission on Higher Education and Mahidol University	Asst. Prof. Direk Limmathurotsakul
15	Long-term Continuous Culture of *Plasmodium Vivax* Stages	University of South Florida, USA	Assoc. Prof. Pratap Singhasivanon/ Dr. Jetsumon Prachumsri
16	Mathematical modeling to design a preparedness plan for the emergence of leptospirosis due to flooding and other environmental changes in Thailand.	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Wirichada Panngam
17	Impact of diabetes mellitus on treatment response for tuberculosis among pulmonary tuberculosis patients in Upper North Thailand	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Saranath Lawpoolsri

No.	Research Title	Grant	Principal investigator
Department of Tropical Hygiene (*Continued*)			
18	The comparative epidemiology of *P. falciparum* and *P. vivax* transmission in Papua New Guinea, Thailand and Brazil	Barcelona Center for International Health Research, Spain	Assoc. Prof. Pratap Singhasivanon/ Dr. Jetsumon Prachumsri
19	DENFREE-Dengue Research Framework for Resisting Epidemics in Europe	Institute Pasteur, France	Assoc. Prof. Pratap Singhasivanon
20	Effectivenessof oral ivermectin for the treatment of human head lice in rural community	Faculty of Tropical Medicine, Mahidol University	Dr. Surapon Yimsamran
21	The ecological determinants of leptospirosis transmission dynamics	The Commission of Higher Education Commission -NEWTON FUND : The Royal Society(Newton Mobility Grant)	Asst. Prof. Wirichada Panngam

Department of Tropical Nutrition and Food Sciences			
1	Development of health behaviors and nutritional status of the Tsunami victims in Phang-nga Province	Brescia University, Italy	Assoc. Prof. Karunee Kwanbunjan
2	Screening and identification of antimicrobial compound from Bifidobacterium with inhibitory activity against Clostridium difficile	The Thailand Research Fund, Commission on Higher Education and Mahidol University	Dr. Amornrat Aroonnual
3	Diversities of related-genes and protiens in obese children with family history obese children with family history of obesity	Mahidol University (Government Budget)	Prof. Rungsunn Tungtringchitr
4	A novel Solanum torvum GH3 beta-glucosidase: molecular characterization, physiological functions, structural elements responsible for its natural substrate specificity, its applications	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Damrongkiat Art-harn
5	Effects of the weight loss program on anthropometric parameters, metabolic syndrome parameters and quantity of energy and nutrients intake among obese women	Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Karunee Kwanbunjan
6	The study of methylation level in osteoporosis in menopause by pyrosequencing	Faculty of Tropical Medicine, Mahidol University	Dr. Pornrutsami Jintaridth
7	Case control study of diet, lifestyle, insulin resistance, inflammatory markers, and risk of developing type-2 diabetes mellitus in rural Thais	Dean's Research Fund, Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Karunee Kwanbunjan

No.	Research Title	Grant	Principal investigator
Department of Tropical Nutrition and Food Sciences (*Continued*)			
8	Effect of lactic acid bacteria on immunomodulation of human colon cell against *Clostridium difficile* infection	Faculty of Tropical Medicine, Mahidol University	Dr. Amornrat Aroonnual
9	Survey of dietary pattern and nutritional status particularly multivitamin deficiencies in relation to cardiovascular disease and diabetes in Thai elderly	Faculty of Tropical Medicine, Mahidol University	Dr. Sarunya Kaewprasert
10	Identification of plant natural products with inhibition of recombinant mosquito alpha-glucosidase	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Damrongkiat Art-harn
11	Prospective study of diet, Life style, Insulin resistance, Inflammatory markers and Risk of Developing Type 2 Diabetes Mellitus in rural Thais	Mahidol University (Government Budget)	Assoc. Prof. Karunee Keanboonjan
12	The mathylation study in replicative periodontal cellular aging and gene expression modification in the development of novel treatment modalities	The Thailand Research Fund	Dr. Pornrutsami Jintaridth
13	Comparison of anti-HIV activity of plastocyanin protein from plants and cyanobacterium	The Thailand Research Fund	Dr. Apanchanid Thepouyporn
14	Health benefit effects of Mao-Luang *(Antidesma Bunius)* crude extract against cardiovascular disease in hyperlipidemic rats	Faculty of Tropical Medicine, Mahidol University	Dr. Pattaneeya Prangthip
15	DNA Methylation Signatures within the Human Brain Cell during Aging	Faculty of Tropical Medicine, Mahidol University	Dr. Pornrutsami Jintaridth
16	Effectiveness of β – glucan supplementation to interleukin-6, interleukin-10 and tumour necrosis factor-alpha levels in overweight and obese subjects	Core Chematis Co., Ltd., Thailand	Dr. Pattaneeya Prangthip
17	Production of Coconut Alpha-Galactosidase in Yeast for Hydrolyzing Raffinose in Soymilk to Increase Nutritional Value and Decrease Soymilk-Allergy	Faculty of Tropical Medicine, Mahidol University	Ms. Kriyaporn Songmuaeng

No.	Research Title	Grant	Principal investigator
Department of Tropical Pathology			
1	Investigating Causes of Acute Renal Failure in Severe Malaria by Histopathology and Immunohistochemistry	The National Research Concil of Thailand	Assoc. Prof. Parnpen Viriyavejakul
2	Induction of apoptosis in human peripheral blood mononuclear cells in vitro by excretory secretory products from the third stage *Gnathostoma spinigerum* larvae	Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Yaowapa Maneerat
3	Gene expression profiles in volve in pathogenesis of atherosclerosis and acute coronary heart disease: A study in Thai patients	Mahidol University (Government Budget)	Assoc. Prof. Yaowapa Maneerat
4	Investigating endothelial cell permeability in severe *P. falciparum* malaria and exploring the role of sphingosine 1 phosphate as a therapeutic agent in protecting severe malaria complications	Faculty of Tropical Medicine, Mahidol University	Assoc. Prof. Parnpen Viriyavejakul
5	Comparison of Protein C System Expression in the Lung between Pulmonary Edema and Non Pulmonary Edema Cases in Severe (Falciparum) Malaria	Faculty of Tropical Medicine, Mahidol University	Dr. Sumate Ampawong
6	Exploring Pancreatic Pathology in Severe Malaria Patients	Faculty of Tropical Medicine, Mahidol University	Ms. Supattra Glaharn
7	Immunomodulatic Role of Sericin on Epidermal Melanocytes and Langerhans Cells : an Approach for Hyperpigmentation Disorders	The Thailand Research Fund	Dr. Sumate Ampawong

Department of Tropical Pediatrics			
1	Evaluation of long-term immunity against Japanese encephalitis in Children vaccinated with *Japanese encephalitis* Vaccine	Department of Tropical Pediatrics	Assoc. Prof. Pornthep Chanthavanich
2	Favirab™ post prescription event monitoring	Sanofi Pasteur Co., Ltd.	Assoc. Prof. Pornthep Chanthavanich
3	The comparison of immunogenicity and adverse reactions after immunization with *Japanese Encephalitis* vaccine produced by BIKEN and Government Pharmaceutical Organization (GPO) in healthy Thai children (JE0150)	Government Pharmaceutical Organization	Assoc. Prof. Pornthep Chanthavanich

No.	Research Title	Grant	Principal investigator
Department of Tropical Pediatrics (*Continued*)			
4	Efficacy and safety of Dengue vaccine in healthy children aged 4 to 11 years in Thailand (CYD23)	Sanofi Pasteur Co., Ltd.	Prof. Arunee Sabchareon
5	Protective Antibodies Against Erythrocyte Invasion Ligands in *Plasmodium falciparum* in Thailand	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Watcharee Chokejindachai
6	Immunogenicity and safety of activated vero cell devired *Japanese Encephalitis* vaccine in Thai children	Liaoning Cheng Da Biotechnology Co., Ltd. China	Assoc. Prof. Pornthep Chanthavanich
7	Accuracy assessment of using WHO criteria in diagnosis of dengue infection	Department of Tropical Pediatrics	Assoc. Prof. Pornthep Chanthavanich
8	Immunogenicity and Safety of Inactivated Vero Cell Derived *Japanese Encephalitis* Vaccine in Thai Children (Phase II)	Bionet Asia co., Ltd., Thailand & Liaoning Cheng Da Biotechnology Co., Ltd. (CDBIO), China	Assoc. Prof. Pornthep Chanthavanich
9	A Phase III, observer blind, randomized, non-influenza vaccine comparator-controlled, multi-country and multi-centre study of the efficacy of GSK Biologicals quadrivalent, inactived, split virion, seasonal influenza vaccine candidate, GSK2282512A (FLU QQIV), administered intramuscularly in healthy children 3 to 8 years of age	GlaxosmithKline (Thailand) Ltd.	Assoc. Prof. Pornthep Chanthavanich
10	EPI coverage survey in Thai and foreign children, since birth to grade 6, in Bangkok	Mahidol University	Asst. Prof. Weerawan Hattasingh
11	Ant hypersensitivity in Thailand : Species identification and development of appropriate allergens for skin testing	The Thailand Research Fund, Commission on Higher Education and Mahidol University	Asst. Prof. Raweerat Sitcharungsri
12	A Phase II, Randomized, Observer-Blind, Multi-Center, Study to Evaluate Safety, Tolerability and Immunogenicity of an Adjuvanted Cell Culture-Derived H5N1 Subunit Influenza Virus Vaccine at Two Differenct Formulations in Healthy Pediatric Subjects (V89_11)	Novartis Thailand	Assoc. Prof. Pornthep Chanthavanich
13	A Phase II, Randomized, Observer-Blind, Multi-Center, Study to Evaluate Safety, Tolerability and Immunogenicity of an Adjuvanted Cell Culture-Derived H5N1 Subunit Influenza Virus Vaccine at Two Differenct Formulations in Healthy Adult Subjects (V89_04)	Novartis Thailand	Assoc. Prof. Pornthep Chanthavanich

No.	Research Title	Grant	Principal investigator
Department of Tropical Pediatrics (*Continued*)			
14	Burden of dengue infection in children and adults of Bang Phae distric, Ratchaburi province, Thailand	IVI, South Korea	Assoc. Prof. Pornthep Chanthavanich
15	A Phase II, open, randomized, control, multicenter study to assess the immunogenicity and reactogenicity of GSK Biologicals' meningococcal serogroups A, C, W-135, Y tetanus toxoid conjugate vaccine (MenACWY-TT) administered alone as compared to MenACWY-TT co-administered with GSK Biologicals' HPV vaccine Cervarix or co-administered with Cervarix and GSK Biologicals' tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine adsorbed (Tdap) (Boostrix) in female adolescents and young adults at 9-25 years of age	GlaxosmithKline (Thailand) Ltd.	Assoc. Prof. Pornthep Chanthavanich
16	Long-Term Follow-Up of Hospitalized Dengue and Safety in Thai Children Who Were Included in an Efficacy Study of a Tetravalent Dengue Vaccine	Sanofi Pasteur Co., Ltd.	Asst. Prof. Kriengsak Limkittikul
17	A Phase I/II, Randomized, Observer-Blind, Multi-Center, Study to Evaluate Immunogenicity and Safety of Four Influenza Vaccine in Healthy Pediatric Subjects 6 to < 48 Months of Age Protocol No. V58P16	Novartis Thailand	Assoc. Prof. Pornthep Chanthavanich
18	Phase 3, Randomized, Open Label, Multicenter, Controlled Clinical Study to Evaluate Safety and Immunogenicity of a Rabies Vaccine Administered, with and without Human Rabies Immunoglobulin, Using the New "4-sites, 1-week" Intradermal Regimen for Postexposure Prophylaxis Compared to the Currently Recommended "2-sites, TRC" Intradermal Regimen in Children and Adults Subjects)" protocol no. V49_30	Novartis Thailand	Assoc. Prof. Pornthep Chanthavanich
19	A Double-Blind, Randomized, Placebo-Controlled, Age Descending and Expansion Phase 2 Study to Investigate the Safety and Immunogenicity of a Tetravalent Chimeric Dengue Vaccine in Healthy Volunteers Between the Ages of 1.5-45 years	Inviragen Inc., USA	Assoc. Prof. Chukiat Sirivichayakul

No.	Research Title	Grant	Principal investigator
Department of Tropical Pediatrics (*Continued*)			
20	Detection of asymptomatic dengue infection in school children in Muang district, Ratchaburi province, and dengue serotype2-specific and cross reactive antibody	National Science and Technology Development Agency (NSTDA)	Assoc. Prof. Chukiat Sirivichayakul
21	A phase I/II randomized, observer-blind, controlled study to assess safety and immunogenicity of acellular Pertussis vaccine given alone or in combination with Tetanus-diphtheria vaccine in healthy adults aged 18-35 years	Bionet Asia co., Ltd., Thailand	Assoc. Prof. Chukiat Sirivichayakul
22	A Phase III, Stratified, Randomized, Observer Blind, Controlled, Multicenter Clinical Study to Evaluate the Safety, Immunogenicity and Efficacy of an Adjuvanted Quadrivalent Subunit Influenza Virus Vaccine Compared to Non-Adjuvanted Comparator Influenza Vaccine in Children ≥6 to < 72 Months of Age" V118_05	ICON Clinical Research (Thailand) Limited	Assoc. Prof. Pornthep Chanthavanich
23	Sensitivity and specificity of indirect ELISA to detect dengue antibody in annual blood sample for diagnosing asymptomatic dengue infection and incidence of asymptomatic dengue infection in Muang district, Ratchaburi province	Mahidol University (Government Budget)	Dr. Supawat Chatchen
24	Efficacy and Safety of a Novel Tetravalent Dengue Vaccine in Healthy Children Aged 2 to 14 years in Asia) : CYD14	Sanofi Pasteur Co., Ltd.	Prof. Usa Tisayakorn
Vaccine Trial Center			
1	A Randomized, international, Double-Blinded (With In-House Blinding), Controlled With GARDASILTM,Dose-Ranging, Tolerability, Immunogenicity, and Efficacy Study of a Multivalent Human Papillomavirus (HPV) L1 Virus-Like Particle (VLP) Vaccine Administered to 16 to 26 Year Old Women	Merck & Co., Inc	Prof. Punnee Pitisuttithum
2	Phase II/III safety and immunogenicity of pandemic live attenuated influenza vaccine (PLAIV) candidate strain A/17/CA/2009//38 (HIN1) in healthy Thais	Thai Health Promotion Foundation	Prof. Punnee Pitisuttithum

No.	Research Title	Grant	Principal investigator
Vaccine Trial Center (*Continued*)			
3	Phase III Clinical Trial to Study the Immunogenicity, Tolerability, and Manufacturing Consistency of V503 (A Multivalent Human Papillomavirus [HPV] L1 Virus-Like Particle [VLP] in Preadolescents and Adolescents (9 to 15 years old) with a Comparison to Young Women (16 to 26 years old)	Merck & Co., Inc	Prof. Punnee Pitisuttithum
4	Phase I safety and immunogenicity of live attenuated influenza H5 candidate vaccine strain A/17/turkey/05/133 (H5N2) in healthy Thai volunteers	World Health Organization	Dr. Supachai Rueknggam/ Prof. Punnee Pitisuttithum
5	A phase III trial of Aventis Pasteur live recombinant ALVAC-HIV (VCP1521) priming with Vaxgen gp 120 B/E (AIDSVAX B/E) boosting in HIV-uninfected Thai adults	Walter Reed Army Institute of Research	Dr. Supachai Rueknggam/ Prof. Punnee Pitisuttithum
6	Randomized, Double Blind Evaluation of Late Boost Strategies for HIVuninfected Participants in the HIV Vaccine Efficacy Trial RV 144: "Aventis Pasteur Live Recombinant ALVAC-HIV (vCP1521) Priming with VaxGen gp120 B/E (AIDSVAX® B/E) Boosting in HIV-uninfected Thai Adults	N/A	Dr. Supachai Rueknggam/ Prof. Punnee Pitisuttithum
Mahidol Vivax Research Unit			
1	Proteomic study of human malaria parasite *Plasmodium vivax* liver stages for development of vaccine and drugs	The Geneva Foundation, USA	Dr. Jetsumon Prachumsri
2	Development of an Invasion inhibition Assay for Vaccine Screening against *Plasmodium vivax*	Faculty of Tropical Medicine, Mahidol University	Dr. Wanlapa Roobsoong
3	Identification of *Plasmodium* species in oocysts of infected Anopheles mosquitoes	Faculty of Tropical Medicine, Mahidol University	Mr. Chalermpon Kumpitak
4	Discovery & validation of novel *P. vivax* antigens for identification and monitoring of transmission 'hot spots'	NIH	Dr. Jetsumon Prachumsri
5	Production of *P. vivax* infected mosquitoes to support *in vitro* liver-stage research	Bill & Melinda Gates Foundation	Dr. Jetsumon Prachumsri

No.	Research Title	Grant	Principal investigator
Mahidol Vivax Research Unit (*Continued*)			
6	Secretome of hepatocyte cell line (HC04) injected with *Plasmodium vivax*	Mahidol University : Talent Management	Dr. Rapatbhorn Patrapuvich
7	A mouse model for human malaria infection	Seattle Biomedical Research Institute, USA	Dr. Jetsumon Prachumsri
8	Development of cross-species synthetic saccharide vaccine for malaria	Walter and Eliza Hall Institute of Medical Research (WEHI), Australia	Dr. Jetsumon Prachumsri
9	Antibody Testing	Walter and Eliza Hall Institute of Medical Research (WEHI), Australia	Dr. Jetsumon Prachumsri
10	Investigation of infectivity of *P. vivax* sporozoite during development in mosquito's salivary glands	Faculty of Tropical Medicine, Mahidol University	Dr. Rapatbhorn Patrapuvich
11	Plasmodium detection in saliva by Real-time PCR	Faculty of Tropical Medicine, Mahidol University	Mr.Teerawat Saeseu
12	In vitro assay of anti PV liver stage compounds	MMV Medicines for Malaria Venture, Switzerland	Dr. Jetsumon Prachumsri
13	Southeast Asia Malaria Research Center: ICEMR	NIH/ The Pennsylvania State University	Dr. Jetsumon Prachumsri
14	Enhancing Vivax Malaria Research in Thailand : D43	NIH/ The Pennsylvania State University	Dr. Jetsumon Prachumsri
15	Plasmodium-specific nanoparticles for live-imaging and gene expression analysis of *P. vivax* liver-stage parasites	Center of Emerging and Neglected Infectious Disease : CENID, Mahidol University	Dr. Rapatbhorn Patrapuvich
16	In vitro assay of anti PV liver stage compounds	MEDICINES FOR MALARIA VENTURE : MMV	Dr. Jetsumon Prachumsri
17	FRG KO HuHep Mouse Model to study Malaria pre-erytrocytic intervention Strategies	SEATTLE BIOMEDICAL RESEARCH INSTITUTE	Dr. Jetsumon Prachumsri
18	Development of *Plasmodium vivax* gametocyte and its association with mosquito infectivity	Thailand Research Fund	Dr. Wanlapa Roobsoong
19	Residual Malaria Transmission in the Greater Mekong Subregion-Studies to examine its magnitude and identify its causes	Malaria Consortium	Dr. Jetsumon Prachumsri
20	Microscale Liver Platform for Liver-stage Malaria	The Broad Institute	Dr. Jetsumon Prachumsri

No.	Research Title	Grant	Principal investigator
Mahidol Vivax Research Unit (*Continued*)			
21	Humanized Mouse Models for Efficacy of Novel *P.vivax* Pre-erythrocytic Antigens	Seattle Biomedical Research Institute dba Center for Infectious Disease Research (SBRI dba CID research)	Dr. Jetsumon Prachumsri
22	FRG KO huHep Mouse Medel for *P.vivax* Pre-Erythrocytic Intervention Studies	Seattle Biomedical Research Institute dba Center for Infectious Disease Research (SBRI dba CID research)	Dr. Jetsumon Prachumsri
Center of Excellence for Antibody Research			
1	Development of scFv-antibodies against Rabies virus using phage display technology	Faculty of Tropical Medicine, Mahidol University	Mr. Surachet Benjathummarak
2	Epitope mapping of Neutralizing human monoclonal antibody against Dengue virus using Escape Mutant Strategy	Faculty of Tropical Medicine, Mahidol University	Ms. Sujitra Keadsanti
3	Engineering the Fc region of cross-neutralizing human IgG antibodies against dengue virus	The Thailand Research Fund	Dr. Chonlatip Pipattanaboon
Malaria Research Center			
1	Development of scFv-antibodies against Rabies virus using phage display technology	Grand Challenges Canada, Canada	Asst. Prof. Thanat Chookajorn
2	Development of strategies to prevent and contain artemisinin resistance	Center of Emerging and Neglected Infectious Disease : CENID, Mahidol University	Asst. Prof. Thanat Chookajorn
3	Hit to Lead development for the inhibitor against malarial GTP Cyclohydrolase I	National Science and Technology Development Agency (NSTDA)	Asst. Prof. Thanat Chookajorn
4	Overcoming the Problem of Artmisinin Resistance by Tracing Drug Resistance Evolution and Developing Resistance-Reversion Compound	Thailand Research Fund	Asst. Prof. Thanat Chookajorn
5	Overcoming Antigenic Variation by Genome Editing Technology	Thailand Research Fund	Asst. Prof. Thanat Chookajorn
6	Reversal of Artemisinin Resistance by means of Chemical Genetics	OPEN LAB FOUNDATION,UK	Asst. Prof. Thanat Chookajorn
7	การพัฒนาชุดคิทตรวจเชื้อดื้อยา กลุ่ม artemisinin	Faculty of Tropical Medicine, Mahidol University	Asst. Prof. Thanat Chookajorn

No.	Research Title	Grant	Principal investigator
Hospital for Tropical Diseases			
1	Incidence of bacteria infection and their antibiogram in the hospital for tropical diseases	Faculty of Tropical Medicine, Mahidol University	Ms. Chatnapa Duangdee
2	A Study of blood Hemoglobin in Hypertriglyceridemia	Faculty of Tropical Medicine, Mahidol University	Ms. Benjamaporn Wongphan
Laboratory Animal Unit, Office of Research Services			
1	The Study of Microbiological Air Quality of Laboratory Animal Unit, Faculty of Tropical Medicine, Mahidol University	Faculty of Tropical Medicine, Mahidol University	Ms. Thanyaluk Krasae
Faculty of Tropical Medicine			
1	โครงการทุนพัฒนาศักยภาพการวิจัยเชิงสถาบันของคณะเวชศาสตร์เขตร้อน มหาวิทยาลัยมหิดล	The Thailand Research Fund	Dr. Jetsumon Prachumsri

Bangkok School of Tropical Medicine

NEW ENROLLMENTS 2016

Diploma in Tropical Medicine and Hygiene
DTM&H 2016

NAME•SURNAME	COUNTRY
1. MD Nazmul Haque	Bangladesh
2. Vo Thi Thu	Vietnam
3. William August Cornell II	America
4. Dario Zuercher	Swiss
5. Aye Mya Sandar	Myanmar
6. Yin Myat Thwe	Myanmar
7. Hla Kay Thi	Myanmar
8. Kyi Pyar Soe	Myanmar
9. Lenin Daniel Martinez Aguilar	Mexican
10. Michinori Shirano	Japan
11. Kensuke Takahashi	Japan
12. Yukiya Kurahashi	Japan
13. Shuhei Ota	Japan
14. Ken Takada	Japan
15. Navuddh Oam	Cambodia
16. Daniel Tiefengraber	Austria
17. Sebastian Baumgartner	Austria

Master in Clinical Tropical Medicine
MCTM 2016

NAME•SURNAME	COUNTRY
1. Ranida Poksiri	Thai
2. Chollasap Sharma	Thai
3. Akkavich Harnnavachok	Thai
4. Nujareenart Kuhakasemsin	Thai
5. Jitfa Loorungroj	Thai
6. Bianca Eder	Austrian

Master in Clinical Tropical Medicine
MCTM 2016 (*Continued*)

NAME•SURNAME	COUNTRY
7. Aye Mya Sandar	Myanmar
8. Hla Kay Thi	Myanmar
9. Kyi Pyar Soe	Myanmar
10. Lenin Daniel Martinez Aguilar	Mexican
11. Navuddh Oam	Cambodian
12. Yin Myat Thwe	Myanmar
13. Khaing Zaw Latt	Myanmar

Master in Clinical Tropical Medicine Tropical Pediatrics
MCTP 2016

NAME•SURNAME	COUNTRY
1. Yukiya Kurahashi	Japan

Doctor of Philosophy in Clinical Tropical Medicine
PhD-CTM 2016

NAME•SURNAME	COUNTRY
1. Sutopa Talukdar	Bangladesh

Master of Science in Tropical Medicine
MSc-TM 2016

NAME•SURNAME	COUNTRY
1. Pyae Phyo Kyaw	Myanmar
2. Aung Minn Thway	Myanmar
3. Xiaotao Zhao	China
4. Phoom Kaewprommal	Thai
5. Norinee Arlee	Thai
6. Arphatsara Yadee	Thai

NEW ENROLLMENTS 2016 (*Continued*)

Master of Science in Tropical Medicine
MSc-TM 2016 (*Continued*)

NAME•SURNAME	COUNTRY
7. Aun Praoparotai	Thai
8. Natenarin Phengbubpha	Thai
9. Paradee Teebumrung	Thai
10. Surawut Saengkaew	Thai
11. Chanya Jetsukontorn	Thai
12. Thamrong Wongchang	Thai

Doctor of Philosophy in Tropical Medicine
PhD-TM 2016 (*Continued*)

NAME•SURNAME	COUNTRY
5. Tanes Sangsri	Thai
6. Achaporn Yipsirimetee	Thai
7. Ga Young Lee	Korea
8. Soe Htet Aung	Myanmar
9. Sai Wai Yan Myint Thu	Myanmar
10. Vajee Petphong	Thai

Doctor of Philosophy in Tropical Medicine
PhD-TM 2016

NAME•SURNAME	COUNTRY
1. Shwe Sin Kyaw	Myanmar
2. Paweena Pitimontol	Thai
3. Pennapa Chamavit	Thai
4. Siriporn Yongchaitrakul	Thai

Master of Science in School Health
MSc-SH 2016

NAME•SURNAME	COUNTRY
1. Jean Faulan Signar	Philippines
2. Yee Mon	Myanmar
3. Karma Wang Di	Bhutan

GRADUATES 2016

Diploma in Tropical Medicine and Hygiene
DTM&H 2016

NAME•SURNAME	COUNTRY
1. Sebastian Baumgartner	Austrian
2. Daniel Tiefengraber	Austrian
3. Navuddh Oam	Cambodian
4. Ken Takada	Japanese
5. Shuhei Ota	Japanese
6. Yukiya Kurahashi	Japanese
7. Kensuke Takahashi	Japanese
8. Michinori Shirano	Japanese

Diploma in Tropical Medicine and Hygiene
DTM&H 2016 (*Continued*)

NAME•SURNAME	COUNTRY
9. Lenin Daniel Martinez Aguilar	Mexican
10. Kyi Pyar Soe	Myanmar
11. Hla Kay Thi	Myanmar
12. Yin Myat Thwe	Myanmar
13. Aye Mya Sandar	Myanmar
14. Dario Zuercher	Swiss
15. Vo Thi Thu	Vietnamese
16. Md Nazmul Haque	Bangladeshi

GRADUATES 2016 (*Continued*)

Master of Clinical Tropical Medicine
MCTM 2016

NAME•SURNAME	COUNTRY
1. Yadanar Su Aung Kyaw	Myanmar
2. Bou Bonito	Cambodian
3. Sutopa Talukdar	Bangladeshi
4. Felix Benjamin Moek	German
5. Takashi Watari	Japanese
6. Poe Poe	Myanmar
7. Khin Kye Mon	Myanmar
8. Thet Hnin Aye	Myanmar
9. Nang Swam Phwan Kyi	Myanmar
10. July Moe	Myanmar
11. Myo Oo Zaw	Myanmar

Doctor of Philosophy in Clinical Tropical Medicine
PhD-CTM 2016

NAME•SURNAME	COUNTRY
1. Rattanaphone Phetsouvanh	Laotian

Master of Science in Tropical Medicine
MSc-TM 2016

NAME•SURNAME	COUNTRY
Pattarakul Pakchotanon	Thai
Wai Yan Aung	Myanmar
Lalitra Udomrak	Thai
Maneerat Kityapan	Thai

Doctor of Philosophy in Tropical Medicine
PhD-TM 2016

NAME•SURNAME	COUNTRY
1. Jareonsri Satung	Myanmar
2. Sirilak Dusitsittipon	Myanmar
3. Somporn Saiwaew	China
4. Neelima Afroz Molla	Thai
5. Supannee Kaewsutthi	Thai
6. Vichaya Suttisunhakul	Thai
7. Chantira Suttikornchai	Thai

Diploma in Biomedical and Health Informatics
DBHI 2016

NAME•SURNAME	COUNTRY
1. Juan Miguel Dy Talens	Filipino
2. Apinant Sangkatumvong	Thai
3. Nutcha Theerawarodom	Thai

Master of Science in Biomedical and Health Informatics
MSc-BHI 2016

NAME•SURNAME	COUNTRY
1. Sai Wai Yan Myint Thu	Myanmar
2. Nguyen Khac Hai	Vietnamese
3. Thazin Myint	Myanmar

Master of Science in School Health
MSc-SH 2016

NAME•SURNAME	COUNTRY
1. Channa Touch	Cambodian
2. Ae Mon Htun	Myanmar
3. Wang Norbu	Bhutanese
4. May Thu Hlaing	Myanmar

THESIS TITLES

Doctor of Philosophy in Tropical Medicine Program (Ph. D. Trop. Med)

NAME	TITLE OF THESIS	ADVISOR	CO-ADVISOR
Ms. Chantira Sutthikornchai 5337899 TMTM/D	Thai oyster (*Crassostrea belcheri*) is not a good sentinel for monitoring of cryptosporidium contamination.	Prof. Dr. Yaowalark Sukthana	
Mrs. Rattanaphone Phetsouvanh 5637148 TMCT/D	Clinical epidemiology and genetic diversity of *Orientia tsutsugamushi* among patients with scrub typhus in Lao PDR	Prof. Sasithon Pukrittayakamee	Asst. Prof. Dr. Piengchan Sonthayanon, Assoc. Prof. Dr. Kesinee Chotivanich
Ms. Charoen Saetang 5336054 TMTM/D	The effect of diabetes mellitus on response to tuberculosis treatment among new pulmonary tuberculosis patients in upper north Thailand	Asst. Prof. Dr. Saranath Lawpolsri Niyom	Asst. Prof. Dr. Jaranit Kaewkungwal
Ms. Sirilak Dusitsittipon 5337898 TMTM/D	Genetic diversity and phylogeography of *Angiostrongylus* species in Thailand	Asst. Prof. Dr. Urusa Thaenkham	Asst. Prof. Dr. Dorn Watthanakulpanich, Asst. Prof. Dr. Poom Adisakwattana , Assoc. Prof. Dr. Chalit Komalamisra
Ms. Somporn Saiwaew 5337905 TMTM/D	Effects of low molecular weight heparin on cytoadhesion of *Plasmodium falciparum*	Assoc. Prof. Dr. Kesinee Chotivanich	Assoc. Prof. Dr. Emsri Pongponratn, Dr. Prakaykaew Charunwatthana, Prof. Dr. Ratchanee Udomsaengpet
Ms. Neelima Afroz MOLLA 5438235 TMTM/D	Climate refugees : Disease burden among children under 5 years old in slum communities of Dhaka, Bangladesh	Assoc. Prof. Dr. Waranya Wongwit	Assoc. Prof. Dr. Pongrama Ramasoota
Ms. Supannee Kaewsutti 5438739 TMTM/D	Identification of the gene(s) associated with familial early-onset obesity in Thai children	Prof. Dr. Rungsunn Tungtrongchitr	
Mr. Vichaya Suttisunhakul 5537183 TMTM/D	Evaluation of improved methods for detection and identification of *Burkholderia pseudomallei* infection	Assoc. Prof. Dr. Narisara Chantratita	Asst. Prof. Dr. Thareerat Kalambaheti, Asst. Prof. Dr. Nathamon Kosoltanapiwat, Asst. Prof. Muthita Vanaporn, Dr. Supachai Topanurak

THESIS TITLES (*Continued*)

Master of Science Program in Tropical Medicine (M.Sc. Trop. Med.)

NAME	TITLE OF THESIS	ADVISOR	CO-ADVISOR
Lt. Maneerat Kityapan 5536100 TMTM/M	Development of immuno-magnetic nanoparticles as the prototype for enrichment of *Leptospira spp*.	Asst. Prof. Dr. Usa Boonyuen	Prof. Dr. Wanpen Chaicumpa, Asst. Prof. Dr. Santi Maneewatchararangsri, Asst. Prof. Dr. Urai Chaisri
Ms. Pattarakul Pakchotanon 5436337 TMTM/M	Identification and characterization of potential immunomodulatory molecules, serine protease inhibitors, from *Schistosoma mansoni*	Asst. Prof. Dr. Poom Adisakwattana	Asst. Prof. Dr. Urai Chaisri
Mr. Wai Yan Aung 5438231 TMTM/M	Adherence to three days course of artemether-lumefantrine treatment in Myanmar	Assoc. Prof. Dr. Pratap Singhasivanon	Prof. Srivicha Krudsood, Asst. Prof. Dr. Saranath Lawpoolsri Niyom
Ms. Lalitra Udomrak 5636953 TMTM/M	Optimization for expression of Culex quinquefasciatus gambicin antimicrobial peptide and its application.	Asst. Prof. Dr. Dumrongkiet Arthan	Asst. Prof. Dr. Yuvadee Mahakunkijcharoen, Dr. Amornrat Aroonnual

Doctor of Philosophy in Clinical Tropical Medicine Program (Ph.D. Clin. Trop.Med.)

NAME	TITLE OF THESIS	ADVISOR	CO-ADVISOR
Mr. Bou Bonito 5838566 TMCT/M	Prevalence of glucose-6-phosphate dehydrogenase deficiency in *Plasmodium vivax* patients at Bangkok Hospital for Tropical Diseases	Prof. Dr. Polrat Wilairatana	Prof. Srivicha Krudsood, Asst. Prof. Dr. Noppadon Tangpukdee, Asst. Prof. Dr. Kittiyod Poovorawan, Dr. Sant Muangnoicharoen
Ms. Sutopa Talukdar 5838567 TMCT/M	Renal involvement among patients with acute undifferentiated fever at the Hospital for Tropical Diseases, Bangkok, Thailand	Assoc. Prof. Dr.Vipa Thanachartwet	Prof. Srivicha Krudsood, Asst. Prof. Dr. Noppadon Tangpukdee, Asst. Prof. Dr. Kittiyod Poovorawan, Dr. Sant Muangnoicharoen

THESIS TITLES (*Continued*)

Doctor of Philosophy in Clinical Tropical Medicine Program (Ph.D. Clin. Trop.Med.) (*Continued*)

NAME	TITLE OF THESIS	ADVISOR	CO-ADVISOR
Mr. Felix Benjamin Moek 5838568 TMCT/M	Hemodynamic changes and fluid therapy in acute febrile illness: a prospective, non-invasive pilot study	Dr. Wirongrong Chierakul	Assoc. Prof. Dr. Yupaporn Wattanagoon, D. Prakaykaew Charunwatthana, Dr. Maleerat Suthirat , Asst. Prof. Dr. Saranath Lawpoolsri Niyom
Mr. Takashi Watari 5838569 TMCT/M	Parameters of SIRS among patients with acute febrile illness at Hospital for Tropical Diseases, Bangkok, Thailand	Asst. Prof. Dr. Supat Chamnanchanunt	Assoc. Prof. Varunee Desakorn, Assoc. Prof. Dr. Vipa Thanachartwet, Assoc. Prof. Wattana Leowattana
Mrs. Poe Poe 5838570 TMCT/M	Hemodynamic parameters in acute febrile illness	Dr. Prakaykaew Charunwatthana	Dr. Wirongrong Chierakul, Dr. Chatporn Kittitrakul, Dr. Maleerat Suthirat, Asst. Prof. Dr. Saranath Lawpoolsri Niyom
Ms. Khin Kye Mon 5838571 TMCT/M	Acute liver failure caused by dengue in a hospital for tropical diseases in Thailand	Asst. Prof. Dr. Kittiyod Poovorawan	Assoc. Prof. Wattana Leowattana, Dr. Chatporn Kittitrakul, Asst. Prof. Dr. Apichart Nontprasert
Ms. Thet Hnin Aye 5838572 TMCT/M	Characteristics of gonorrhoea and chlamydial infections by anatomical sites in men who have sex with men at Bangrak hospital	Asst. Prof. Dr. Jittima Dhitavat	Assoc. Prof. Benjaluck Phonrat
Ms. Nang Swam Phwan Kyi 5838573 TMCT/M	The severity and clinical outcomes of dengue infection among non-obese and obese adult patients	Asst. Prof. Dr. Weerapong Phumratanaprapin	Assoc. Prof. Benjaluck Phonrat, Dr. Borimas Hanboonkunupakarn, Dr. Natthida Sriboonvorakul

THESIS TITLES (*Continued*)

Doctor of Philosophy in Clinical Tropical Medicine Program (Ph.D. Clin. Trop.Med.) (*Continued*)

NAME	TITLE OF THESIS	ADVISOR	CO-ADVISOR
Ms. July Moe 5838574 TMCT/M	Trend in efficacy of artemisinin combination therapy in patients with uncomplicated *Plasmodium falciparum* malaria treated at Bangkok Hospital for Tropical diseases from the year 2005 to 2014: A retrospective study	Prof. Dr. Polrat Wilairatana	Prof. Srivicha Krudsood, Asst. Prof. Dr. Noppadon Tangpukdee, Dr. Sant Muangnoicharoen, Asst. Prof. Dr. Kittiyod Poovorawan
Mr. Myo Oo Zaw 5838577 TMCT/M	Prevalence and risk factors for antiretroviral treatment failure at Sichon Hospital, Thailand.	Asst. Prof. Dr. Jittima Dhitavat	Assoc. Prof. Benjaluck Phonrat
Ms. Yadanar Su Aung Kyaw 5838576 TMCT/M	Salmonella gastroenteritis : epidemiology, clinical manifestations and treatment outcome	Dr. Chatporn Kittitrakul	Assoc. Prof. Dr. Yupaporn Wattanagoon, Dr. Wirongrong Chierakul, Asst. Prof. Dr. Kittiyod Poovorawan, Asst. Prof. Dr. Saranath Lawpoolsri Niyom

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

NAME	TITLE OF THESIS	ADVISOR	CO-ADVISOR
Mr. Sai Wai Yan Myint Thu 5838281 TMBI/M	Assessment of the use of paper based dental record and perception on electronic dental record among the dental professionals in Myanmar	Asst. Prof. Dr. Wirichada Pan-Ngum	Asst. Prof. Dr. Jaranit Kaewkungwal , Dr. Ngamphol Soonthornworasiri
Mr. Nguyen Khac Hai 5838285 TMBI/M	Knowledge, attitude and practice regarding security and confidentiality of HIV-related information among staff at OPC in Vietnam	Assoc. Prof. Dr. Jaranit Kaewkungwal	Asst. Prof. Dr. Saranath Lawpoolsri Niyom, Dr. Podjanee Jittamala
Mrs. Thazin Myint 5838290 TMBI/M	Hotspot areas and factors associated with road traffic accident on Yangon-Nay Pyi Taw-Mandalay Expressway, Myanmar	Asst. Prof. Dr. Saranath Lawpoolsri Niyom	Dr. Ngamphol Soonthornworasiri, Dr. Surapon Yimsamran

THESIS TITLES (*Continued*)

Master of Science Program in School Health (M.Sc. SH)

NAME	TITLE OF THESIS	ADVISOR	CO-ADVISOR
Ms. Channa Touch 5838357 TMSH/M	Prevalence of intestinal parasitic infection of primary schoolchildren in Aranyaprathet District, Sa Kaeo Province, Thailand.	Dr. Pannamas Maneekan	Asst. Prof. Dr. Dorn Watthanakulpanich, Dr. Ngamphol Soonthornworasiri , Asst. Prof. Dr. Dumrongkiet Arthan
Mrs. Ae Mon Htun 5838358 TMSH/M	Prevalence of common intestinal parasitic infections among food handlers in government schools, Tatkon , Naypyitaw Union Territory, Myanmar	Dr. Pannamas Maneekan	Asst. Prof. Dr. Dorn Watthanakulpanich, Dr. Ngamphol Soonthornworasiri , Asst. Prof. Dr. Yuvadee Mahakunkijcharoen
Mr. Wang Norbu 5838361 TMSH/M	Obesity prevalence and contributing factors among adolescents in secondary schools in Pemagatshel District, Bhutan	Dr. Pattaneeya Prangthip	Dr. Pannamas Maneekan, Dr. Ngamphol Soonthornworasiri, Asst. Prof. Dr. Dumrongkiet Arthan
Ms. May Thu Hlaing 5838362 TMSH/M	Occupational risks among teachers in Southern District, Yangon Region, Myanmar	Dr. Podjanee Jittamala	Dr. Pannamas Maneekan, Asst. Prof. Dr. Dumrongkiet Arthan, Dr. Ngamphol Soonthornworasiri

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