

**Summary of
Scientific Workshop to
Explore e-ASIA Research Collaboration Opportunities
Focused on
Emerging Infectious Disease and Cancer Priorities
in South East Asia and the Pacific Rim**

(Convened in Conjunction with the e-ASIA Joint Research Program
Board Meeting)

August 13-14, 2015; Yangon, Myanmar

**October 14th, 2015
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Brief of Scientific Workshop

Date:

August 13-14, 2015

Place:

INYA LAKE HOTEL, Yangon, Myanmar

Purposes:

- Share knowledge about current research (published and unpublished data) on malaria, tuberculosis, drug-resistant infectious organisms, neglected tropical diseases, and infectious diseases linked to malignancies, such as HPV, viral hepatitis, and HIV
- Assess the infectious disease and cancer research priorities in e-ASIA member countries and among South East Asian scientists
- Identify potential collaborative research partnerships to address the prevention, diagnosis, treatment and control of high-priority infectious diseases in South East Asia and the Pacific Rim

Expected results:

Scientists, clinicians, epidemiologists, representatives of public health organizations and research funding organizations that are members of e-ASIA, and others interested in infectious diseases and cancer will share scientific knowledge about priority infectious diseases and infection-related cancer.

The workshop will foster relationships between meeting participants to promote the development of collaborative research proposals for submission to the e-ASIA JRP during its next call for proposals in the health sector.

Sponsor and Host:

NIAID, NCI, University of Maryland and AMED take a role of sponsor of this workshop.

Myanmar MOST, the host of the e-ASIA 4th Annual Board Meeting, also took a role of host for the workshop and made a great contribution to manage the workshop with ten staffs or more.

Scientific Planning Council (SPC):

SPC, set up early July, developed the agenda originally provided by NIAID & NCI and appointed moderators and speakers for the workshop not only from US & Japan but also from Asian countries: Indonesia, Myanmar, Thailand and Vietnam. The council consists of four US scientists,

two Japanese scientists, and a representative from NIAID, two representatives from AMED and an e-ASIA JRP secretariat.

Please refer to the member list.

Topics of the Session 1, 2, 3 and 4:

In accordance with the focused diseases in the Health Research Call opened August 4th, the following topics are selected by the Scientific Planning Council as the current hot topics in South East Asia.

Session 1: Priority Emerging Infectious Diseases in South East Asia

- Emerging Artemisinin-Resistant Malaria in South East Asia
- Emerging Drug-Resistant Tuberculosis in South East Asia

Session 2: Priority Emerging Viral Diseases in South East Asia

- Dengue
- Hand, Foot and Mouth Disease
- Emerging Viruses and Antimicrobial Resistance

Session 3: Infectious Diseases and Cancer in South East Asia

- HPV and Liver Fluke
- HIV/AIDS
- Low-cost Technologies

Session 4: Working Group Discussions

Participants:

Total number of participants is 57. Participants by country are as follows:

Cambodia: 3, Indonesia: 2, Japan: 15, Lao PDR: 1, Myanmar: 23, Russia: 1, Thailand: 2, US: 9, Vietnam: 1

Application to the Call:

We closed our Call in "Health Research" on September 29th, 2015 and received 17 pre-proposals, and the number of PIs by country is as follows:

Cambodia: 4, Indonesia: 4, Japan: 13, Lao PDR: 2, Myanmar: 5, NZ: 7, Russia: 4, US: 4, Vietnam: 9

Agenda
Scientific Workshop to
Explore e-ASIA Research Collaboration Opportunities Focused on
Emerging Infectious Disease and Cancer Priorities
in South East Asia and the Pacific Rim

August 13, 2015

Opening Remarks and Welcoming Remarks

8:30-8:45 Dr. Kiyoshi Kita, University of Tokyo, Japan
Dr. Phyu Phyu Win, Representative of Host e-ASIA Member, MOST Myanmar

Session 1 Priority Emerging Infectious Diseases in South East Asia

Moderator: Dr. Christopher Plowe, University of Maryland, USA

8:45-9:30 **5-minute presentations each by e-ASIA member organizations on their
priorities for research cooperation**

(0-1) AMED: Mr. Masahiko Noda

“Activities of Agency for Medical Research and Development (AMED)”

(0-2) NIAID: Mr. Gray Handley

“Background and Priorities of the U.S. National Institute of Allergy and Infectious Diseases”

(0-3) NCI: Dr. Ted Trimble

“Priorities of the U.S. National Cancer Institute”

(0-4) MOH Cambodia: Dr. Rekol Huy, National Malaria Centre, Cambodia

“MOH Cambodia: Research Collaborations and Research Priorities”

(0-5) RFBR: Mr. Yaroslav Sorokotyaga

“Russian Foundation for Basic Research - For the benefit of the Russian Science
_”

(0-6) MOH/MOST Laos: Dr. Mayfong Mayxay, University of Health Sciences, Laos

“Health Research Priorities, Ministry of Health, Lao PDR”

9:30-9:45 Questions

9:45-10:45 **Emerging Artemisinin-Resistant Malaria in South East Asia**

(1-1) Dr. Rick Fairhurst, NIAID/National Institutes of Health, USA

“Artemisinin resistance and ACT antimalarial failure in Cambodia.”

(1-2) Dr. Toshihiro Mita, Juntendo University, Japan

“Baseline polymorphisms of artemisinin-resistant marker, *Pfkelch13*-propeller, in
geographically widespread *Plasmodium falciparum* parasite populations:

	genotyping of archive blood samples”
	(1-3) Dr. Myaing Nyunt, Institute for Global Health
	“Malaria research and capacity building in support of malaria elimination in Myanmar”
10:45-11:05	Break
11:05-11:45	Emerging Drug-Resistant Tuberculosis in South East Asia
	(1-4) Dr. Yasuhiko Suzuki, Hokkaido University, Japan
	“Molecular characterization of multidrug-resistant <i>Mycobacterium tuberculosis</i> isolates in Asian countries”
	(1-5) Dr. Khin Saw Aye, Department of Medical Research, Myanmar
	“Emerging Drug Resistant Tuberculosis in Myanmar”
11:45-12:00	Questions
12:00-1:00	Lunch
Session 2	Priority Emerging Viral Diseases in South East Asia
Moderator:	Dr. Kazuyoshi Ikuta, Kanonji Institute, The Research Foundation for Microbial Diseases of Osaka University, Japan
	Dr. Sujan Shresta, La Jolla Institute for Allergy & Immunology, USA
1:00-2:40	Emerging Viral Diseases of Priority in South East Asia
	○ Dengue
	(2-1) Dr. Futoshi Hasebe, Nagasaki University, Japan
	“Dengue and Dengue Research in Vietnam”
	(2-2) Dr. Hlaing Myat Thu, Department of Medical Research, Myanmar
	“Dengue Scenario in Myanma.”
	(2-3) Dr. Sujan Shresta, La Jolla Institute for Allergy & Immunology, USA
	“Influence of Antibodies and T cells on Dengue Disease Outcome”
	○ Hand, Foot and Mouth Disease
	(2-4) Dr. Satoshi Koike, Tokyo Metropolitan Institute of Medical Science, Japan
	“Development of a new animal model for enterovirus 71 infection”
	○ Emerging Viruses and Antimicrobial Resistance
	(2-5) Dr. Dodi Safari, Eijkman Institute for Molecular Biology, Indonesia
	“Exploration Study on Emerging Virus and Antimicrobial Resistance in Indonesian Population”
2:40-3:00	Questions
3:00-3:20	Break

Session 3 Infectious Diseases and Cancer in South East Asia

Moderator: Dr. Edward L. Trimble, Director, Center for Global Health, National Cancer Institute, National Institutes of Health, USA
“Overview – Cancers associated with chronic infection.”
Dr. Soe Aung, President (Oncology Society, MMA), Honorary Professor (Medical Oncology), Former Professor & Head of Medical Oncology, University of Medicine 1.

3:20-5:30 Infectious Diseases and Cancer

- HPV and Liver Fluke
(3-1) Professor Mya Thi Da, Obstetrical and Gynaecological Society, Myanmar Medical Association, Myanmar
“Cervical Cancer Screening using a Visual Inspection with Acetic Acid (VIA) and Cryotherapy based Single-Visit Approach in Three Townships in Myanmar in 2013 and 2014”
(3-2) Dr. Sopit Wongkham, Khon Kaen University, Thailand
“Liver fluke associated cholangiocarcinoma: A silent killer of the Northeast Thailand”
- HIV/AIDS
(3-3) Dr. Chureeratana Bowonwatanuwong, Chonburi Hospital, Thailand
“Facing with HIV/ AIDS and Malignancy”
(3-4) Dr. Thuong Vu Ngyuen, Pasteur Institute HCM, Vietnam
“HIV/AIDS and Cancers in Vietnam”
(3-5) Professor Htin Aung Saw, Prof./Consultant Physician, Specialist Hospital, Waibargi, Yangon, Myanmar “HIV and Associated Cancers: Current status in Myanmar”
- Low-cost Technologies
(3-6) Dr. Paul Pearlman, NCI/National Institutes of Health, USA
“Cancer Detection, Diagnosis, and Treatment Technologies for Global Health: NCI Funded Projects Targeting Cancers Associated with Chronic Infection”

5:30-6:00 Questions and Announcements

August 14, 2015

Session 4 Working Group Discussions

Co-moderators: Dr. Christopher Plowe, Dr. Kazuyoshi Ikuta and Dr. Paul Pearlman

These sessions are intended to provide time for participants to discuss their individual research interests and issues that have arisen during the meeting to explore opportunities for future research collaboration.

The Working Groups are invited to address the following four questions:

1. Based on the discussions at this meeting and your knowledge of the field, what are the most important scientific questions that need to be addressed in your area of interest through research in the region?
2. What opportunities do you see for this research in the region including potential partners, research participants (study population), and locations for this research?
3. What challenges or hurdles need to be addressed to enable this research to proceed in the region?
4. Are there any other issues or points your working group wants to assure are considered at this meeting?

8:30-13:30 Working Groups Discussions

Group 1: Emerging Infectious Disease - Drug resistant malaria & drug resistant tuberculosis

Group 2: Priority Emerging Viral Diseases in South East Asia

Group 3: Infectious Diseases and Cancer

Working Group Reports

Closing Remarks – Dr. Kiyoshi Kita, University of Tokyo, Japan

Opening Remarks

Dr. Kiyoshi Kita
Professor, University of Tokyo

Thank you chairman, for your kind introduction.

Good morning ladies and gentlemen.

On behalf of the organizers and sponsors of the e-ASIA Scientific Workshop, it's indeed my pleasure to make opening remarks and express my gratitude to all those who made this workshop reality.

At first, I would like to express our gratitude to NIAID, NCI, University of Maryland and AMED for taking a role of sponsor of this workshop.

At the second, I would like to express our thanks to Myanmar MOST and e-ASIA Secretariat for your preparation of the workshop in quite a short time. Thank you very much.

As a member of Scientific Planning Council of the workshop, I highly appreciate so many speakers accept our invitation and are willing to come to make a presentation in Yangon from Asian countries, US and Japan.

I would like to tell several issues about this conference. The first is "Asian program in health research." Reflecting Asian characteristics of the geography and climate, infectious diseases such as malaria, HIV/AIDS, Dengue and Chikungunya, impose a high burden to some of Asian countries, even in the present age; so many anti-infectious drugs are launched and the state of sanitation is improved.

In response to the increase of transportation across and inside Asia and all over the world, we should address to the risk of pandemic outbreak of infectious diseases which occur in some local region. Coming to everyone's mind are SARS at Singapore, Taiwan, Vietnam and China in 2003, and also you remember that at Republic Korea in this year is MARS, and also Ebola in Western Africa last year.

In accordance with economic development, cardiovascular diseases and cancer which are common issues in western countries have become serious health care issues in some Asian countries, too. Taking this trend, e-ASIA JRP has added "Cancer Research" as a new field of 2015 call which opened August 4th.

The points of cancer issue in e-ASIA are as follows:

Lung cancer is the most commonly diagnosed and the leading cause of cancer death in ASEAN, Liver cancer is the second most common may largely be explained by high prevalence of chronic HBV, and also colorectal cancer is the third most commonly diagnosed reflecting changes in dietary

patterns in the counties of South Asia region.

Second issue is “Past calls in the field of Infectious diseases.” e-ASIA JRP had conducted two calls in the field of Infectious Diseases, and I took part in as an evaluator in Japan side. At the first call, we received 8 proposals and approved 2. At the second call, we received 22 proposals and approved 5.

Totally, now 7 projects are running in the field of infectious diseases such as influenza virus, Mycobacterium tuberculosis, dengue infection, H5N1 influenza viruses, vector-borne viral diseases, liver fluke, malaria vaccine and drug-resistant Mycobacterium which are supposed to bring severe burden to Asian countries.

However, these still exist the needs for further medical research and development with different approaches to lessen a large amount of the sufferings from these diseases in this region.

And, thirdly, I would like to tell you about “Past and today’s Workshops.”

In the past, e-ASIA JRP have held 4 times of Science Talk and Workshop. At 2011 in Tokyo, at 2012 and 2013 in Singapore and last year in Dhaka.

The purposes of these workshops are to explore medical and scientific needs in each Asian country and to promote scientists’ network among us.

Linking to the “health research call” opened August 4th, this workshop aims at something different from the past ones; to share knowledge about current research and to promote and inspire application to the call.

Lastly, I would like to tell you about “Theme of the Scientific Workshop.” As you can see in the program, this workshop consists of four parts;

Session 1; Emerging Infectious Diseases, Artemisinin-Resistant Malaria and Drug-Resistant Tuberculosis

Session 2; Emerging Viral Diseases, Dengue and Hand, Foot and Mouth Disease

Currently, the number of patient in Tokyo is increasing. We didn’t expect it, but actually now it happened.

And, Session 3; Infectious Diseases and Cancer, HPV and Liver Fluke, HIV/AIDS, Low-cost Technologies

Session 4; Working Group Discussions tomorrow.

So, above topics cover major current Asian issues in this workshop.

We’ve invited moderators and speakers. They are kindly coming here, even very short notice, from

Myanmar, Vietnam, Thailand, Russia, US and Japan.

Looking at the name of speakers, I'm quite sure that they will provide very good information and new knowledge with suggestions for not only health research but also health care issue, and I am willing to listen their presentations not only as a representative of Japan but also as an actual scientist. I would like to enjoy.

Thank you very much for your attendance and attention.

Welcoming Remarks

Dr. Phyu Phyu Win
Deputy Director General, Myanmar MOST

Representative Adviser US citizens from US Embassy of Myanmar, Secretary General of e-ASIA, Representatives of JST, AMED, NIAID, and NCI, and the Director General of Department of Medical Research, Ministry of Health, representatives of e-ASIA member organizations, invited speakers and professors from medical university and ladies and gentleman, good morning and welcome to Myanmar.

It is my great pleasure and honor to provide welcome remarks of this Scientific Workshop to Explore e-ASIA Research Collaboration Opportunity Focused on Emerging Infectious Disease and Cancer Priorities in South East Asia and the Pacific Rim.

This workshop is the convened event in conjunction with e-ASIA JRP 4th annual Board meeting which we, Myanmar Ministry of Science and Technology, hosted successfully accomplished yesterday here.

This workshop is supported by AMED, NIAID, NCI, University of Maryland and e-ASIA JRP.

I would like our Myanmar Government to promote research and innovation by developing national and international discussion.

We, Ministry of Science and Technology, are responsible for national research and development program as focused on ministry, so Ministry of Science and Technology are also happy to participate in the e-ASIA workshop.

So, in this workshop, scientists, ministry researchers of e-ASIA member organizations, medical university professors and others from e-ASIA region in infectious disease and cancer field are able to increase scientific information regarding infectious disease and infection related cancer such as HPV, HIV.

I would like to express my sincere attention to AMED, NIAID, NCI and e-ASIA JRP for giving us an opportunity to support this workshop.

And this workshop is aimed to foster relationship between meeting participants to promote collaborative research proposals for the e-ASIA JRP health research call.

Your knowledge and experience surely contributes to the success of this workshop so that all invited speakers and participants present with honor here and share their experience and knowledge.

I hope, taking this opportunity, at this workshop, all of the Myanmar medical researchers as well as other participants develop collaborative research partnership to establish mutual multi-national collaboration scheme.

Thank you very much.

Title of your presentation:

Activities of Agency for Medical Research and Development (AMED)

Name: Masahiko NODA

Position: Managing Director for Department of International Affairs

Organization name: Agency for Medical Research and Development(AMED)

Abstracts and References:

The Japan Agency for Medical Research and Development (AMED) was established on April 1, 2015 to engage in research and development in the field of medicine, establishing and maintaining an environment for this R&D, providing funding and managing R&D projects. AMED focuses on promoting integrated medical R&D from basic research to practical applications, to smoothly achieve application of outcomes, and to achieve comprehensive and effective establishment / maintenance of an environment for medical R&D. AMED implements these tasks based on the Healthcare Policy determined by the Cabinet and on the Plan for the Promotion of Medical R&D by the Headquarters chaired by the Prime Minister. AMED consolidates budgets for research expenses, which had previously been allocated from different sources -- the Ministry of Education, Culture, Sports, Science and Technology (MEXT), the Ministry of Health, Labour and Welfare (MHLW), and the Ministry of Economy, Trade and Industry (METI), resulting effective management of researches.

For the next e-ASIA "Health Research" Call for proposals, AMED would be interested to have the proposals including infectious diseases of high priorities in the East ASIA Region, such as Malaria, Tuberculosis, Dengue, Hand, Foot and Mouth Disease, and HIV. We would also be interested in antimicrobial resistance and cancers associated with infection mentioned above.

Title of your presentation:

Background and Priorities of the U.S. National Institute of Allergy and Infectious Diseases

Name: F. Gray Handley

Position: Associate Director for International Research Affairs

Organization name: National Institute of Allergy and Infectious Diseases (NIAID)/ National Institutes of Health (NIH)

Your brief research history: Interests include immunologic, allergic, and infectious diseases of global health importance

Abstracts and References:

The National Institute of Allergy and Infectious Diseases (NIAID), one of the 27 institutes of the National Institutes of Health, conducts and supports a global program of research aimed at improving diagnosis, treatment, and prevention of immunologic, allergic, and infectious diseases. Given the global impact of infectious disease, a key aspect of the Institute's mission is to foster and maintain a strong program of international research and research capacity building. NIAID has long supported scientific collaboration that engages scientists in multiple countries in the East Asia and Pacific region. NIAID funds both extramural and intramural scientists, networks, jointly funded and managed programs, training and scientific exchanges, conferences, and workshops. In fiscal year 2014, NIAID provided \$69.4 Million to support research in East Asia and the Pacific region. In addition to being engaged in the e-ASIA Joint Research Program, some of NIAID's current joint programs and networks in the region are the Centers of Excellence for Influenza Research and Surveillance, the International Centers of Excellence for Malaria Research, the Southeast Asia Infectious Disease Clinical Research Network, the U.S.-Japan Cooperative Medical Sciences Program, the U.S.-Japan Framework Initiative for Safe and Secure Society, and the U.S.-China Program for Biomedical Collaborative Research. Additional, potential opportunities for research collaboration include scientific exchange programs, collaborative research projects on infectious diseases, and meetings on emerging infectious diseases. Collaboration in infectious disease research advances science and global public health, expands scientist access to valuable scientific resources, responds to global needs, and has economic impact. For the next e-ASIA "Health Research" Call for Proposals, NIAID would be interested to have the call open to include infectious diseases of high priority in the Asia-Pacific region, such as HIV/AIDS, tuberculosis, influenza, hepatitis, dengue, drug resistant malaria, and other emerging infectious diseases.

Title of your presentation:

Priorities of the U.S. National Cancer Institute

Name: Dr. Edward L. Trimble

Position: Director (Center for Global Health)

Organization name: U.S. National Cancer Institute

Abstracts:

One of our strongest priority right now is how the country develop cancer control plans to tackle some respects of cancer such as cancer surveillance, including cancer treatment.

We are very interested in as follows:

- Cancer associated with chronic infectious diseases such as hepatitis, HIV etc.
- Promoting roll out a vaccine to prevent cancer
- Tabaco control
- Tabaco control impacts on various types of cancer and smoking tabaco decreases the effectiveness of treatment of HIV
- Low cost technology

Title of your presentation: MOH Cambodia: Research Collaborations and Research Priorities
Name: Dr. Rekol Huy Position: CNM Director Organization name: Ministry of Health, National Center for Parasitology, Entomology and Malaria Control, Cambodia.
Abstracts and References: This presentation discusses the role of National Ethics Committee for Health Research (NECHR) at the Ministry of health and the role of Health Research Unit (HRU) at the National Program for Parasitology, Entomology and Malaria Control (CNM). NECHR reviews and approves all types of research proposals involving human participants (safeguard the dignity, rights, safety and well-being). HRU, created in 2005, is to review research proposals and summarize proposals before proceeding to NECHR and coordinates and implements all kinds of researches. The map of CNM researches are for academic, technical and operational (OR) within a variety of groups' national and international partners well-known research units. Most of the clinical studies have focused on monitoring the safety and efficacy of the treatment of Artemisinin and multi-drug resistant falciparum malaria and malaria elimination. OR are focused on cross-border malaria and the uptake of existing interventions. The surveillance mostly focuses on asymptomatic parasitemia, cross-border surveillance as well as sero-epidemiology and genetic epidemiology. The CNM's future plans focus on building in house laboratory capacity for both malaria and dengue; continuing to build the CNM research capacity; expanding and strengthening collaborations with research institutes; and seeking support for the dengue researches and surveillance.

Title of your presentation: Russian Foundation for Basic Research - For the benefit of the Russian Science -
Name: Yaroslav V. Sorokotyaga Position: Division Director, International Relations Organization name: RFBR
Abstracts: RFBR participation in multilateral calls European Organization for Nuclear Research: Two calls for research projects performed (project duration – up to 3 years) 1st Call announced in 2007: 18 projects supported 2nd Call announced in 2010: 18 projects supported European Molecular Biology Laboratory: Two calls for research projects performed 1st Call announced in 2010: 6 projects supported (2 year projects) 2nd Call announced in 2014: 6 projects supported (3 year projects) RFBR participation in multilateral calls: Active running competitions of multilateral initiatives with RFBR participation in 2014-2015 are as follows: 1. ASPERA 2. G8 Research Councils Initiative on Multilateral Research Funding 3. ERA.Net RUS PLUS 4. BONUS 5. Belmont Forum (Arctic Observing and Research) 6. Regional Russian-Ukrainian-Belorussian thematic call 7. Black Sea Horizon 8. e-Asia JRP RFBR and e-Asia Why e-Asia? RFBR has been developing the similar idea: • In order to develop scientific collaboration in Asia-Pacific region in May 2012 RFBR presented Initiative on multilateral research funding between funding organization from APEC countries. Representatives from Vietnam, Indonesia, China, Korea, Taiwan, Philippines, Japan on a meeting in Vladivostok signed the declaration on supporting the idea of multilateral collaboration research funding in the region.

- Initiative was supported by Asia Pacific Parliamentary Forum resolution (January 2013).
February 2013 – a first e-Asia JRP call on proposals for research projects announced.
Not to create competitive structure

Title of your presentation: Health Research Priorities, Ministry of Health, Lao PDR
Name: Mayfong Mayxay Organization name: University of Health Sciences, Laos
Abstracts: Research Strategic Components 1. Research governance 2. Capacity development of researchers 3. Defining and implementing research priorities 4. Dissemination and application of research outcomes 5. Seeking funding sources and mobilization for health research 6. Monitoring and evaluation of research strategy Defining & Implementing Research Priorities 1. Nutrition (MDG 1) 2. Mother and child health (MDG 4 & 5) 3. Infectious diseases: HIV/AIDS, malaria, TB (MDG 6) & other prioritized infectious diseases such as dengue etc. 4. Environmental sustainability, sanitation (MDG 7) and primary health care 5. NCD (cardiovascular diseases, hypertension, DM, CA, etc.) 6. Treatment and rehabilitation 7. Health financing & insurance 8. Food & medicines including traditional medicines 9. Quality of health service Other Prioritized Infectious Disease Research 1. Dengue 2. Japanese encephalitis 3. Rickettsial infection (scrub typhus, murine typhus) 4. Typhoid fever 5. Leptospirosis 6. Sepsis

Title of your presentation:

Artemisinin resistance and ACT antimalarial failure in Cambodia

Name: Rick Fairhurst, MD, PhD

Position: Chief, Malaria Pathogenesis and Human Immunity Unit

Organization name: Laboratory of Malaria and Vector Research, National Institute of Allergy and Infectious Diseases (NIAID), National Institutes of Health (NIH)

Your brief research history: Dr. Fairhurst received his MD and PhD (molecular biology) degrees from the University of California, Los Angeles (UCLA). Following an Internal Medicine residency and an Infectious Diseases fellowship at UCLA Medical Center, he joined the NIH in 2001. Dr. Fairhurst studies how red blood cell mutations and immunity protect African children from malaria, and how Southeast Asian parasites become resistant to antimalarial drugs. To support these efforts, he travels frequently to malaria-endemic areas of Mali and Cambodia, where his trainees and colleagues enroll patients in clinical research protocols and study parasites in laboratory investigations. Since 2005, he has worked closely with Cambodia's National Center for Parasitology, Entomology, and Malaria Control to strengthen its research capacity, by building new laboratories and insectaries, training students and provincial health staff, and conducting multiple clinical protocols. He has received the NIAID Outstanding Mentor-of-the-Year Award in 2011 for his commitments to training and diversity, and the ASTMH Bailey K. Ashford Medal for distinguished work in tropical medicine in 2013.

Abstracts and References:

The emergence of artemisinin resistance¹ in Southeast Asia threatens regional and global endeavors to control and eliminate *Plasmodium falciparum* malaria.² Artemisinin resistance is associated with slow parasite clearance in patients,³ and is caused by mutations in the parasite's 'K13' gene.^{4,5} Artemisinin combination therapies (ACTs) – the combination of an artemisinin and a partner drug – still cure patients with slow parasite clearance as long as the partner drug is effective. However, slow parasite clearance in ACT-treated patients exposes more parasites to partner drugs alone, increasing their chance of becoming resistant to these drugs and causing treatment failures. This problem quickly evolved in Western Cambodia, where the frontline ACT (dihydroartemisinin-piperaquine) now cures only half of malaria patients.⁶ More funding is needed in Cambodia to (i) investigate whether artemisinin resistance is worsening, (ii) stop the further spread of artemisinin resistance, (iii) monitor the efficacy of frontline ACTs where *K13* mutations are common, (iv) identify currently-available drugs that cure patients who fail frontline ACTs; and (v) advance new compounds through clinical trials.

1. Fairhurst, RM. *Curr Opin Infect Dis*, in press (2015).
2. Dondorp AM, et al. *New Engl J Med* 2011;365:1073-5.
3. Ashley EA, et al. *New Engl J Med* 2014;371:411-23.
4. Arieu F, et al. *Nature* 2014;505:50-5.
5. Strainer J, et al. *Science* 2015;347:428-31.
6. Spring MD, et al. *Lancet Infect Dis* 2015;15:683-91.

Title of your presentation:

Baseline polymorphisms of artemisinin-resistant marker, *Pfkelch13*-propeller, in geographically widespread *Plasmodium falciparum* parasite populations: genotyping of archive blood samples

Name: Toshihiro Mita, MD, PhD

Position: Professor

Organization name: Department of Molecular and Cellular Parasitology, Juntendo University School of Medicine,

Your brief research history:

1990-1999 Tokyo Jikei Medical University hospital, gastroenterologist

1999-2012 Department of International Affairs and Tropical Medicine in Tokyo women's medical university, malaria research

2012- Department of Molecular and Cellular Parasitology, Juntendo University School of Medicine, malaria research

Abstracts and References:

Although artemisinin combination therapies have been deployed as a first-line treatment for uncomplicated malaria in almost all endemic countries, artemisinin-resistant parasites have emerged and have gradually spread across the Greater Mekong sub-regions. There is growing concern that the resistant parasites may migrate to or emerge indigenously in sub-Saharan Africa, which might provoke a global increase in malaria-associated morbidity and mortality. Therefore, development of molecular markers that enable identification of artemisinin resistance with high sensitivity is urgently required to combat this issue. In 2014, a potential artemisinin-resistance responsible gene, *Plasmodium falciparum kelch13*, was discovered. Molecular epidemiological analyses have identified as many as 60 non synonymous mutations in *kelch13* so far, but whether these mutations have been selected by the recent increase of artemisinin usage or merely reflect a high background polymorphism independent of selection is currently unknown. To elucidate this, we sequenced the *kelch13*-propeller domain in global 581 *P. falciparum* isolates obtained before the first report of artemisinin-resistance. In this presentation, we will show baseline information of the distribution of *kelch13* polymorphism and discuss its related resistant mechanisms and potential as a molecular marker.

Title of your presentation:

Malaria research and capacity building in support of malaria elimination in Myanmar

Name: Myaing Myaing Nyunt MD PhD MPH

Organization name: Institute for Global Health, University of Maryland School of Medicine
Baltimore, Maryland USA

Abstracts and References:

Myanmar plays a critical role in the elimination of malaria in the Greater Mekong Subregion (GMS). It has by far the heaviest malaria burden in Southeast Asia, the region that has been the historical gateway for dissemination of drug-resistant malaria to India and the rest of the world, with catastrophic results for global health, especially in sub-Saharan Africa. Evidence of independent emergence of artemisinin-resistant malaria in Myanmar was cited by the World Health Organization as a key reason for shifting from a strategy of containment of resistance to regional malaria elimination. In close collaboration with civilian and military government ministries, the private sector, and non-governmental groups, we are assessing the molecular epidemiology of multidrug resistant malaria and evaluating the extent and distribution of asymptomatic *Plasmodium falciparum* and *P. vivax* malaria in the general and pregnant populations, in preparation for the regional elimination of malaria in GMS. Early results show that artemisinin-resistant K13 mutant parasites have repeatedly emerged independently with evidence of some spread across the China-Myanmar and Thailand-Myanmar borders, but no evidence of westward spread from Cambodia to Myanmar. The prevalence of malaria infection is highly heterogeneous, and molecular surveillance will be needed to target elimination interventions, possibly including targeted mass drug treatment.

Title of your presentation:

Molecular characterization of multidrug-resistant *Mycobacterium tuberculosis* isolates in Asian countries

Name: Yasuhiko Suzuki

Position: Professor

Organization name: Hokkaido University Research Center for Zoonosis Control

Brief research history:

Education:

1977 – 1981 Faculty of Science, Shizuoka University (Bachelor of Science)

1981 – 1983 Graduate School of Science, Shizuoka University (Master of Science)

1984 – 1988 Graduate School of Medicine, Osaka University (Ph.D. of Science)

Professional Appointments:

1988 – 1991 Assistant Professor, Osaka University Research Institute for Microbial Diseases

1991 – 1999 Researcher, Osaka Prefectural Institute of Public Health

1999 – 2003 Senior Researcher, Osaka Prefectural Institute of Public Health

2003 – 2005 Associate Professor, Tottori University Faculty of Medicine

2005 – present Professor, Hokkaido University Research Center for Zoonosis Control

Research area:

1. Development of diagnostic methods for tuberculosis and other pathogens
2. Molecular epidemiological study of tuberculosis
3. Elucidation of drug resistance acquisition mechanism of pathogenic bacteria

International collaboration

2007 to date Research projects on mycobacteria with National Institute of Health, Thailand

2008 to date Genotyping and detection of drug resistant *Mycobacterium tuberculosis* in Myanmar with Department of Medical Research (Lower Myanmar), Myanmar

2008 to Date Research projects on multidrug-resistant tuberculosis with Nepal Anti-Tuberculosis Association

2008 to Date Research projects on multidrug-resistant tuberculosis with International Center for Diarrheal Diseases Research, Bangladesh

Abstracts and References:

Multidrug-resistant *Mycobacterium tuberculosis* (MDR-MTB) has become a major problem in tuberculosis (TB) control all over the world. For the prevention of the spread of MDR-TB, it is important to elucidate the transmission dynamics by characterizing *M. tuberculosis* (MTB) clinical isolates using molecular technique.

We have been characterizing clinical isolates of MDR-MTB in Nepal, Bangladesh, Myanmar, Thailand and Japan by drug resistance-associating gene analysis, spoligotyping, variable number tandem repeat (VNTR), long sequence polymorphism (LSP) and multi-locus sequence typing (MLST) analyses.

The drug resistance-associating gene analysis elucidated the distinct contribution of mutations in each country. And genotype analysis by spoligotyping, VNTR, LSP and MLST identified the increased ratio of Beijing family strains along with the acquisition of number of drug resistance. Ongoing transmission of extensively drug-resistant *M. tuberculosis* in Nepal and Japan and the clonal expansion of single MDR-MTB strain in Thailand over a long period of time at least from 2006 to 2014 was also elucidated by genotype analysis. These results suggested the importance of continuous characterization of MDR-MTB clinical isolates in high TB burden countries in Asian countries.

Contributors: Bhagwan Maharjan (Nepal), Zeaur Rahim (Bangladesh), Khin Saw Aye (Myanmar), Benjawan Phetsukusiri (Thailand), Aki Tamaru and Chie Nakajima (Japan)

Title of your presentation: Emerging Drug Resistant Tuberculosis in Myanmar
Name: Dr. Khin Saw Aye Position: Director (Research) Organization name: Department of Medical Research, Union of Myanmar Your brief research history: I have been appointed at Department of Medical Research since 1992 and involving research projects on pathology, immunology, microbiology, clinical, epidemiology and molecular studies of malaria, leprosy, tuberculosis, dengue, cancer and hepatitis. Recently I have collaboration with Hokkaido University, Japan for genotyping and detection of drug resistant <i>Mycobacterium tuberculosis</i> in Myanmar.
Abstracts and References: Tuberculosis (TB) is one of the disease of National Concern and still a major public health problem in Myanmar. Myanmar is one of the 22 TB high burden countries, also 27 MDR-TB high burden and 44 TB/HIV high burden countries in the world (Global TB Report 2014, WHO). Myanmar National Tuberculosis Programme (NTP) has implemented WHO recommended Stop TB Strategy since 2007. NPT is now running with 14 Regional and State TB centers and 101 TB teams at district and township levels. In 2011, NPT expended TB control activities to additional 5 townships in Napyitaw Council Area, covering all 330 townships. For Drug Resistant Tuberculosis, National Drug-Resistant TB Committee was established in September 2006. DOTS- Plus pilot project was launched in 10 selected townships in Yangon and Mandalay Regions in July, 2009 with approval of Green Light Committee (GLC) and in close collaboration with WHO and Medecins Scans Frontieres-Holland (MSF-H). Then, MDR-TB management was expended up to 22 townships in Yangon and Mandalay Regions in 2011 with Global Fund (GF) support. Total number of township for MDR-TB diagnosis, treatment and care services were scaled up to 38 townships in 2012 and 53 townships in 2013 not only in Yangon and Mandalay regions, but in two Regions as well as two States (Annual Report 2013, NTP). Scientific data of MDR-TB in Myanmar will be presented at Scientist Workshop. As Myanmar shares an open boarder with North Thailand, there is a large population movement across the border of these countries. Thus we postulated frequent air-born transmission of MDR-TB between these points (WHO-2001). By comparing data with that of neighboring countries, we observed the similarity between Myanmar and north Thailand RIF-resistant isolates in the occurrence of mutations. These data may suggest the emergence of MDR-TB in Myanmar however information on molecular typing of strains

circulating in both places seemed to be needed in order to ascertain this.

References:

1. Global Tuberculosis Report 2014, World Health Organization.
2. Annual Report 2013, National Tuberculosis Programme, Ministry of Health, Myanmar
3. World Health Organization, Regional Office for South-East Asia. *Cross-Border Initiatives on HIV/AIDS, TB, Malaria and Kala-azar*. Report of an Intercountry Meeting Kathmandu, 6–9 March 2001. 203.90.70.117/PDS_DOCS/B3327.pdf.

Title of your presentation: Dengue and Dengue Research in Vietnam
Name: Futoshi HASEBE Position: Professor Organization name: Center of International Collaborative Research (CICORN), Nagasaki University. Your brief research history: Jul 2007 – present; Research on flaviviruses & bat origin emerging viruses in Vietnam (CICORN). Apr 1993 – Jun 2007; Research on flaviviruses at Institute of Tropical Medicine, Nagasaki University. Oct 1990 – Mar 1993; Molecular biological study on HIV at the National Institute of Infectious Diseases (NIID), Tokyo, Japan.
Abstracts and References: Dengue viruses (DENV) belong to the genus <i>Flavivirus</i> of the family <i>Flaviviridae</i>. Four antigenically distinct DENV serotypes (DENV-1 to -4) circulate between humans and the mosquito vectors <i>Aedes aegypti</i> and <i>Aedes albopictus</i>. Vietnam is a dengue endemic country and dominant DENV serotypes have been replaced every 3 to 4 years. Our group have been conducting dengue research in Vietnam since January 2014 for the 1) characterization of dengue infection and DENV based on epidemic trend, virus serotypes and genotypes, and viral genome sequences in Vietnam and will compare the data from the Philippines, 2) comprehensive identification of quasi-species and vascular permeability factors in humans and elucidation of their role in disease severity, 3) determination of levels of neutralizing antibodies against DENV serotypes and application in predicting dengue epidemics. In our present study which includes retrospective work, we were able to characterize molecularly the DENV that caused the unusual dengue outbreaks in central Vietnam in 2013¹⁾ and we were able to confirm a dengue encephalitis case²⁾. 1) Takamatsu Yuki, <i>et al.</i> A dengue virus serotype 4-dominated outbreak in central Vietnam, 2013. J. Clin Virol 66;May 2015, 24-26. 2) Phu Ly Minh Huong, <i>et al.</i> Isolation of dengue serotype 3 virus from the cerebrospinal fluid of an encephalitis patient in Hai Phong, Vietnam in 2013. J. Clin Virol 70;Sept. 2015,93-96.

Title of your presentation: Dengue Scenario in Myanmar
Name: Dr Hlaing Myat Thu (Ms) Position: Deputy Director General (Research) Organization name: Department of Medical Research, Yangon, Myanmar Your brief research history: I joined the Department of Medical Research in 1992 as a research officer in the Virology Research Division when I started my research on dengue. My thesis for MMedSc (Microbiology) was on "The effect of temperature and humidity on the propagation of dengue virus in <i>Aedes aegypti</i> mosquitoes" (1995). I obtained my PhD from the Queensland University of Technology, Australia in Molecular Virology where my thesis was on "Virus diversity and the Emergence of Dengue" (2005). Although as a virologist, I have co-authored and supervised studies with other viruses, my principal research interests are on the genetic diversity of dengue viruses and rotaviruses and how they relate to disease transmission and pathogenesis.
Abstract and References: The first epidemic outbreak of Dengue Haemorrhagic Fever (DHF) in Myanmar occurred in Yangon, in 1970 and later on spread to other states and divisions in the country. The disease has maintained a cyclical trend with epidemic peaks every 3-4 years. DHF is one of the leading causes of pediatric hospitalization in Myanmar and children under 15 years are mostly affected. The highest incidence was reported in the age group (5-8 years) or primary school children group. However, age distribution of DHF has shown a shift to the older age in recent years. All four dengue serotypes (DENV 1, 2, 3 and 4) have been prevalent in Myanmar and severity of disease had been seen mostly in secondary infections especially when the second infecting virus was DENV 2(1). In 2001, one of the largest DENV 1 outbreaks occurred in Myanmar with 95% of the viruses isolated being DENV 1 which was unusual for an endemic country. At that time, phylogenetic analysis of DENV 1 strains revealed that, a few years back, the previously circulating DENV 1 strain had disappeared and two new strains had emerged. These new strains had evolved and caused the outbreak in 2001 (2). Since then, DENV 1 has been the most frequently detected virus among 4 serotypes for most years in Yangon (Lower Myanmar) up to the present. For Upper Myanmar, DENV 3 and DENV 4 were isolated since 2006 in Mandalay (3). References

- (1). Thein, S., Aung, M.M, Shwe, T.N.,Aye, M.,Zaw, A., Aye,K., Aye, K.M and Aaskov, J. (1997).Risk factors in dengue shock syndrome. *Am J Trop Med Hyg* 56, 566-572.
- (2).Thu, H.M., Lowry, K., Myint, T.T., Shwe, T.N., Han, A.M., Khin, K.K.,Thant, K.Z., Thein, S., Aaskov, J.G. (2004). Myanmar dengue outbreak associated with displacement of serotypes 2, 3 and 4 by dengue 1. *Emerg. Infect. Dis.* 10, 593–597.
- (3).Kyaw Zin Thant, Mya Myat Ngwe Tun, Maria del Carmen Parquet, Shingo Inoue, Yee Yee Lwin,Sanda Lin, Kay Thi Aye, Pe Thet Khin, Tin Myint, Khin Htwe, Takeshi Nabeshima and Kouichi Morita. (2015). Molecular epidemiology of dengue viruses co-circulating in Upper Myanmar in 2006. *Tropical Medicine and Health* 43 (1),21-27.

Title of your presentation:

Influence of Antibodies and T cells on Dengue Disease Outcome

Name: Sujan Shresta

Position: Associate Professor

Organization name: La Jolla Institute for Allergy & Immunology

Your brief research history: I have been a faculty at the La Jolla Institute for Allergy & Immunology since 2005. My laboratory focuses on understanding mechanisms of dengue viral pathogenesis and immunity.

Abstracts and References:

The four serotypes of Dengue virus (DENV) causes the most prevalent mosquito-borne viral illnesses in humans worldwide. Infections range from asymptomatic to a self-limited febrile illness, dengue fever (DF), to the life-threatening dengue hemorrhagic fever/dengue shock syndrome (DHF/DSS). A central question in the DENV field is: Why does a small subset of secondary infection cases develop severe disease, whereas the vast majority of individuals with secondary infections are protected? Both antibodies and T cells have been hypothesized to play a role in DENV pathogenesis, but the relationship between the two immune components in mediating protection versus pathogenesis is unclear. Our studies using mouse models have demonstrated that antibodies can increase DENV infection and convert a mild illness into a lethal disease, a phenomenon termed antibody-dependent enhancement (ADE). In contrast, no study to date has revealed a direct contribution of T cells to DENV pathogenesis. In fact, our studies with mouse models are beginning to highlight the protective role of T cells against DENV by demonstrating that T cells can actually prevent ADE-mediated dengue disease. These results are beginning to provide insights into the interplay between the antibody and T cell responses to DENV. These findings are important for development of anti-DENV antibody-based therapeutics and dengue vaccines, as anti-DENV antibodies may induce ADE and vaccine efforts that focus on eliciting antibody responses alone may be ineffective or even enhance disease under certain conditions.

Title of your presentation: Development of a new animal model for enterovirus 71 infection	
Name:	Satoshi Koike
Position:	Project Leader
Organization name:	Neurovirology Project, Tokyo Metropolitan Institute of Medical Science
Your brief research history:	
1998 to 2009	Department of Microbiology and Immunology, Tokyo Metropolitan Institute for Neuroscience
2009-present	Neurovirology Project, Tokyo Metropolitan Institute of Medical Science
Abstracts and References:	
Enterovirus 71 (EV71), belonging to human enterovirus species A (HEV-A), is one of the causative agents of Hand-Foot-Mouth Disease (HFMD). The clinical symptoms of HFMD are generally mild and self-limiting; however, in some infants and young children, HFMD caused predominantly by EV71 can be complicated by neurological manifestations, including ataxia, tremor, myoclonus, polio-like paralysis, encephalomyelitis, cardiopulmonary failure and death. Large epidemic outbreaks of EV71 have been reported mainly in Southeast and East Asia, including Taiwan, Malaysia, Singapore, Japan and China. Therefore, EV71 infection has a potential to become the most serious public health issue caused by neurotropic picornaviruses. Host range of EV71 is generally limited to primates with a few exception. Therefore it has been difficult to study pathogenicity of EV71 <i>in vivo</i> and to elucidate the viral factors that determine the virulence. We have identified that human Scavenger receptor B2 is a receptor for EV71 (1). We found that SCARB2 can bind EV71, internalize it and then initiate conformational change leading to viral uncoating (2) and that it is a major determinant of host range specificity (3). We then established a mouse model that expresses human SCARB2 (4). The infected mice showed paralysis, ataxia and death, and pathological lesions and viral replication were observed in the central nervous system. Therefore, the SCARB2 tg mice can be a useful tool for basic studies on EV71 pathogenicity and for development of vaccine s and anti-viral drugs. (1) Yamayoshi S. et al. <i>Nature medicine</i> 2009 15;798-801 (2) Yamayoshi S, et al. <i>J Virol.</i> 87:3335-3347, 2013 (3) Yamayoshi S. et al. <i>J Virol.</i> 85: 4937-4936. 2011 (4) Fujii K, et al. <i>Proc. Natl. Acad. Sci. USA.</i> 110: 14753-14758, 2013	

Title of your presentation:

Exploration Study on Emerging Virus and Antimicrobial Resistance in Indonesian Population

Name: Dodi Safari, PhD

Position: Senior Researcher

Organization name: Eijkman Institute for Molecular Biology , Jakarta Indonesia

Your brief research history:

I Jointed with the Eijkman Institute as research assistant since 2001. My PhD program (2006-2010) was focused on synthetic carbohydrate vaccine against *S. pneumoniae*. In 2011, I re-joined to the Institute as a research fellow to study on the molecular epidemiology of *S. pneumoniae* in Indonesia. Currently I also joint with the emerging virus research unit of Eijkman Institute to study the emerging virus in Indonesia.

Abstracts and references:

Indonesia has been identified as a high-risk area for emerging pathogens and human-animal interface. Currently diagnosis of zoonotic pathogens is limited and it is likely that many more pathogens are endemic in the Indonesia region than currently known. Testing archived diagnostic samples for emerging pathogens will build local capacity to work safely with biological agents and strengthen biosecurity within Southeast Asia. There is a critical need for Indonesia to build diagnostic capacity to contribute to regional networks on emerging viruses. The current virus panels tested are flaviviruses, alphaviruses, bunyaviruses, hantaviruses, coronaviruses, paramyxoviruses, enteroviruses, orthomyxoviruses, henipaviruses, filoviruses, adenoviruses. Our study provides insight into the virus circulation in Indonesian population. These findings may facilitate potential preventive strategies that target emerging infectious disease in Indonesia.

The emergence of antimicrobial resistance (AMR) is a public health threat; putting at risk the ability to treat common infections in the community and in hospitals. There is very limited ad-hoc surveillance capacity for detection and confirmation of drug resistant organisms in hospital/primary care settings in Indonesia. Currently the country does not systematically look for bacterial causative agents of respiratory illness and lacks data on the disease burden/carriage of bacterial respiratory diseases, like *S. pneumoniae*, and *S. aureus*. Developing this capacity is critical to further development of the country's surveillance and lab capacity, specifically in regards to the development of an antimicrobial resistance surveillance platform. Establishing a strong network of capable hospitals/laboratories will be critical in helping the country define resistance trends and informing upstream policies on practical use and antibiotic prescribing practices.

1. Safari, D. et al. 2014. Serotype distribution and antibiotic susceptibility of *S. pneumoniae* strains carried by children infected with HIV. PLoS One. 2014 Oct 24;9(10):e110526
2. Myint, KS et al. 2014. West Nile virus documented in Indonesia from acute febrile illness specimens. Am J Trop Med Hyg. 90(2):260-2

Title of your presentation:

Cervical Cancer Screening using a Visual Inspection with Acetic Acid (VIA) and Cryotherapy based Single-Visit Approach in Three Townships in Myanmar in 2013 and 2014

Name of PI: Professor Mya Thida

Position: President

Organization name: Obstetrical and Gynaecological Society, Myanmar Medical Association

Co-investigators : *Dr Khin May Thin*¹, *Dr Zaw Myint Thein*¹, *Dr Yin Yin Sein*¹, *Dr Thazin Nyunt*², *Dr Sandar Kyaw*³

1. Associate Professor, Department of Obstetrics and Gynaecology, University of Medicine 1, Yangon, Myanmar
2. Senior Consultant, Central Women's Hospital, Yangon, Myanmar
3. Director, Maternal and Child Health Department, Yangon Region

Your brief research history:

This study was conducted in three townships in 2013 & 2014 with collaboration with American Society of Clinical Oncology, funded by Conquer cancer foundation and with Seoul National University Hospital funded by KIOCA to find the simple, practical and cost effective technology to be used in the organized screening program to have universal coverage of cervical cancer screening in Myanmar.

Abstracts and References:

This is a community-based study on the effectiveness, safety and acceptability of visual inspection with acetic acid (VIA) and cryotherapy based single-visit approach in cervical cancer prevention (CCP). Well-trained central CCP mobile team from Central Women's Hospital (CWH), University of Medicine 1, visited to Kungyangon Township, Taikkyi Township and South Dagon Township of Yangon Region fortnightly during the weekends. During 21 visits, out of 68,083 married women of 30-49 years age-group, 4901 women were screened with VIA and screen coverage was 7.2%. Test was positive in 228 women and screen-positive rate was 4.65%. Cryotherapy was given to 209 eligible women after proper counseling on same visit and another 14 women on next visit and treatment rate was 97.8%. Five women (2.2%) needed LEEP surgery. Another five women had invasive cancer on screening. Watery vaginal discharge for 2 to 3 weeks after cryotherapy was only symptom reported on one-month follow up. On one-year follow up visit, defaulter rate was 15.7 % and 4 women had persistent VIA positive lesion and cure rate was 97.9%. Fifty three local basic health staff (BHS) were trained during screening visits of central CCP

team, and local CCP team was formed to sustain screening program. All women were happy with single-visit approach supported by their husbands and they successfully adhered to home-care instructions. Screen and treat single-visit approach can be expended to have universal coverage to control cervical cancer in Myanmar.

Key words: Cervical cancer, Screening, Prevention, VIA, Cryotherapy

Title of your presentation:

Liver fluke associated cholangiocarcinoma: A silent killer of the Northeast Thailand

Name: Sopit Wongkham

Position: Professor

Organization name: Department of Biochemistry, Liver Fluke and Cholangiocarcinoma Research Center, Faculty of Medicine, Khon Kaen University, Khon Kaen 40002, Thailand

Your brief research history: Discovery of tumor markers for diagnosis/prognosis and targeted therapy of cholangiocarcinoma at molecular and cellular levels and translating the findings to preclinical and clinical sciences.

Abstracts and References:

Cholangiocarcinoma (CCA), is a rare tumor worldwide, but the incidence is extremely high in the northeast Thailand. At present, approximately 14,000 CCA patients die annually. Both epidemiological and experimental evidence indicate the carcinogenic liver flukes—*Opisthorchis viverrini*, which is endemic in Thailand, Laos People's Democratic Republic, Cambodia and central Vietnam and *Clonorchis sinensis* which is endemic in south China, northern Vietnam, Taiwan and Korea—as the major risk factor of CCA in these regions. In Thailand, approximately 6 million people were estimated to be infected with the *O. viverrini*. At present, there is no specific tumor marker or detection that can detect CCA at an early stage and the diagnosis is almost always too late to be cured. In fact, less than 1% of the liver fluke infected individuals develop CCA. The infection of *O. viverrini* per se cannot produce CCA as demonstrated in the hamster model. Other carcinogens or risk factors may also be required to induce CCA development. Searching for additional risk factors together with a rapid and formal proof of malignancy by using non-invasive procedures such as serum markers are still a constant goal for reducing the loss and leading to a better outcome of CCA patients.

References:

1. Sripa, B, Pairojkul, C. Cholangiocarcinoma: lessons from Thailand. Curr Opin Gastroenterol 24:349-356.
2. Blechacz B, Gores GJ. Cholangiocarcinoma: advances in pathogenesis, diagnosis, and treatment. Hepatology 2008;48(1):308-21.
3. Wongkham S, Silsirivanit A. The State of Serum Markers for Detection of Cholangiocarcinoma. Asian Pacific Journal for Cancer Prevention 2012; 13 (Suppl):17-27.

Title of your presentation:

Facing with HIV/ AIDS and Malignancy

Name: Chureeratana Bowonwatanuwong

Position: Assist. Professor (Internist)

Organization name: Chonburi Hospital, Thailand

Your brief research history:

1973 Mahidol University, Bangkok; B.Sc. (Science)

1975 Mahidol University, Bangkok; M.D. (Medicine)

1981 Chulalongkorn University, Bangkok; Thai Board (Internal Medicine)

1985 Toranomon Hospital, Tokyo, Japan; Certificate (Respiratory Care & Pulmonary Medicine)

1988 Wadsworth VA & Cedars-Sinai Medical Center, UCLA, LA, California, USA; China Medical Board Foundation (Visiting Physician MICU)

She has been involved in caring for HIV-infected patients since the beginning of the epidemic. Since 1999, HIV research studies involving PMTCT and optimization antiretroviral treatment studies in adults. She was also the reference physician for participants in the Vaccine Trial of ALVAC-HIV and AIDSVAX B/E conducted in the eastern area of Thailand. She has co-authored papers published in international journals, and an academic committee member on antiretroviral therapy for the Thai Ministry of Public Health, and an Assistant Professor of Tropical Medicine at Mahidol University, Thailand.

Abstracts and References:

The highly antiretroviral therapy (HAART) definitely escalated the life expectancy of HIV/AIDS patients. The effectiveness of HAART resulted in dramatic decrease in the frequency of AIDS defining cancers ie. Kaposi's sarcoma, non Hodgkin lymphoma but not cervical cancer. Increasing rate of some non AIDS defining cancers (anal, liver, lung breast, prostate, Hodgkin disease) are also evidenced.

Cancer-specific mortality was significant higher in HIV-infected compared with non HIV infected patients with cancer for many cancers including colorectum (adjusted hazard ratio 1.49), pancreas (HR 1.71), larynx (HR1.62), lung(HR1.28), breast (HR2.61), and prostate (HR1.57)

Cancer prevention strategies include:

1. Early HAART to normalize immune status
2. Annual Cervical Pap smear for detection early treatable cervical cancer
3. HBV and HCV therapy
4. Smoking cessation for lung cancer
5. Mammogram yearly in female over 40-50 yrs
6. Anal Pap smear in male who has sexual with male (MSM)
7. Screening for colorectal and prostate cancers

The challenges in prevention and management of HIV/AIDS and cancer are the next step in HIV/AIDS care. HIV/AIDS patients tend to be more marginalized from routine health care than in general population.

Reference:

1. Guide-lines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of health and Human Services. May 30, 2014
<http://www.aidsinfo.nih.gov/contentFiles/adultandAdolescentGL.pdf>
2. Consolidated guidelines on the use of Antiretroviral drugs for treating and preventing HIV infection. Recommendation for a public health approach. June 2013
3. Thailand National Guidelines on HIV AIDS Treatment and Prevention 2014

Title of your presentation:

HIV/AIDS and Cancers in Vietnam

Name: Thuong Vu Nguyen

Position: Deputy Director (for infectious diseases control and prevention, international cooperation)

Organization name: Pasteur Institute Hochiminh City

Your brief research history: HIV/AIDS, STIs, infectious diseases epidemiology

Abstracts and References:

Vietnam's HIV epidemic has recently been declining and continued to be highly concentrated among key affected populations (KAPs). By the mid-2015, this country is home to a reported 227,100 people living with HIV (PLHIV). Males represent about two-thirds of the PLHIV and three-quarter are within the 20-49-year age range. Injecting drug use has played an important role in early Vietnam's HIV epidemic, accounting for about 60% of reported transmission in early epidemics, but gradually reducing to 35% in 2015. Of note, nearly 52% of newly HIV-diagnosed people in 2015 reported their main HIV risk exposure as sexual risk exposure. By the end of 2014, more than 95,000 (over 40%) PLHIV are receiving antiretroviral therapy (ART). It is well-established that there is a link between HIV infection and cancers through both infectious and non-infectious pathways. The prevalence of HCV, active HBV and HPV ranged 66-96%, 6-16%, and 33-85% among Vietnamese HIV-infected KAPs. Furthermore, over 36% of PLHIV are current smokers and 30% of them have positive hazardous drinking. Nonetheless, little is known about cancers in conjunction with HIV/AIDS in Vietnam despite a gradual increase in the overall incidence of cancers and cancer-related deaths in this country in recent decades. Addressing the increasing burden of cancers in PLHIV will require further research on cancers to provide epidemiological trend of this disease, changes in cancer policy, prevention, and early detection and treatment programs for cancers among PLHIV.

Title of your presentation: HIV and Associated Cancers; Current status in Myanmar
Name: Dr. Htin Aung Saw Position: Professor/ Consultant Physician Organization name: Specialist Hospital Waibargi, Yangon , Myanmar Your brief research history: Special interest in clinical management of HIV and Opportunistic Infections. Published study papers of, Diagnosis of PCP, toxoplasmosis, extra-pulmonary Tuberculosis in HIV infected people. Currently working as head of unit for Clinical Research Unit (HIV/AIDS), DMR.
Abstracts and References: With a current prevalence rate of 0.4% in the adult population, the spread of HIV appears to be getting controlled. Increasing accessibility of ART also leads to higher rates of AIDS free survival. But international and national clinical management guidelines put lesser emphasis On HIV associated malignancies. Data collection systems are also not designed for this. A review of the status of HOV associated cancers are needed not only for research purposes. References ; Myanmar National Clinical Management guidelines for HIV (2014) WHO HIV Consolidated guidelines (2013)

Title of your presentation:

Cancer Detection, Diagnosis, and Treatment Technologies for Global Health: NCI Funded Projects Targeting Cancers Associated with Chronic Infection

Name: Paul Pearlman

Position: Science Policy Advisor/Program Officer

Organization name: United States National Cancer Institute

Your brief research history:

Dr. Pearlman received his BSEE from the Georgia Institute of Technology. His graduate work took place at Yale (MS, MPhil, PhD). He has conducted research at the Georgia Institute of Technology, the Georgia Tech Research Institute, Yale Medical School, and University Medical Center Utrecht. His research focus was biomedical image analysis, with emphasis on the development, evaluation, and application of pathology driven/clinically applicable computer aided diagnosis and treatment planning techniques. While his interests extend to all modalities, he finds the development of strategies for low cost, noninvasive imaging such as ultrasound, optical imaging, and stereo-photography particularly exciting. His work has focused on tissue discrimination from RF cardiac ultrasound, optical breast imaging, the registration of cortical surfaces from MR imaging of neonates, and evaluating, by means of registration, the quality of implantation of electrode arrays in the cochlea to treat deafness. After years in basic and clinical research, Dr. Pearlman transitioned to the fields of science policy and diplomacy, obtaining a prestigious American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellowship. He is currently a Health Science Policy Advisor and Program Officer at the United States National Institutes of Health/National Cancer Institute, Center for Global Health.

Abstracts and References:

Dr. Pearlman will discuss the NCI's interests and investments in low cost technology research targeting cancer in low- and middle-income countries. The talk will cover the key elements of the NCI's program in this area and will highlight four technologies being developed for detection, diagnosis, and treatment of HPV associated cancers and one targeted at Hepatitis C.

For more on this program, see:

<http://grants.nih.gov/grants/guide/rfa-files/RFA-CA-15-001.html>

<http://www.cancer.gov/about-nci/organization/cgh/blog/2014/low-cost-technologies>

Group 1, Discussion Summary: Emerging Infectious Disease - Drug resistant malaria & drug resistant tuberculosis

Magnitude of TB in Myanmar:

- A major public health problem
- One of the 22 TB high burden countries,
- One of the 27 high MDR TB burden countries
- One of the 41 high TB/HIV burden countries
- Estimated incidence all forms (WHO report 2013) 373/100,000 pop.
- Estimated prevalence of TB (WHO report 2013) 473/100,000 pop.
- Estimated TB mortality (WHO report 2013) 49/100,000 pop.
- HIV sero-positive among TB patients (28 HSS) 8.5% in 2014 9.8%
- MDR-TB among new TB patients 5.0% (3rd DRS)
- MDR-TB among previously treated TB patients 27.1% (3rd DRS)

Tuberculosis:

Proposed Title of research: Study on drug resistant TB across Myanmar-Laos Border area and Surveillance of 2nd line anti-TB drug resistance

Malaria:

Proposed Title of research: Surveillance of Artemisinin resistant malaria in Rakhine area

Sepsis:

Proposed Title of research: Undiagnosed fevers (Pyrexia of unknown origin)

Challenges or hurdles need to be addressed:

In the case of Myanmar and Lao PDR, there are some research projects whose budgets are not enough to proceed their researches smoothly.

Group 2, Discussion Summary: Priority Emerging Viral Diseases in South East Asia

Dr. Sujan Shresta

La Jolla Institute for Allergy & Immunology, USA

The discussion group identified the following four research priorities.

1. Defining dengue viral genetic diversity in Myanmar, Indonesia, and Cambodia. In particular, the discussion was focused on the dengue burden in Myanmar. In recent years, the incidence of severe dengue disease in adults and infants has been rising in both upper and lower Myanmar. Previously, severe disease was predominantly observed in children. Therefore, it is critical to understand this change in epidemiology of dengue infection in Myanmar and to compare/contrast viral evolution and transmission in upper vs lower Myanmar. To achieve these objectives, next generation sequencing of viral isolates should be used first to identify the potential viral determinants responsible for the epidemiologic change. If resources permit, the role of these potentially important viral determinants in modifying dengue infection and disease in relevant cell culture and mouse models should be investigated using a reverse genetics approach.
2. Identifying non-dengue viral pathogens in cases with dengue-like symptoms but no dengue viral antigen/RNA detection. The specimens will be screened by a series of viruses panels, such as Hantaviruses, Henipaviruses, Zikaviruses, Enteroviruses. Participants from Indonesia reported identification of Zika virus in some of the non-dengue cases, suggesting that these particular viruses may be emerging and may pose a significant problem in the future. To explore the prevalence of Zika, Hanta, Nipha, and other unknown pathogens, the participants discussed the need to perform both vector and pathogen isolation, followed by next generation sequencing of the unknown pathogen isolates.
3. Vaccine development. The participants voiced their concern about the Sanofi dengue vaccine candidate. As the vaccine does not appear to be suitable for naïve, susceptible individuals and children under 9 years of age, and countries like Myanmar need the vaccines to work in young children aged 5-9 as well as naive children and adults, the participants voiced the need to develop second generation dengue vaccine candidates.
4. Dengue autopsy studies. Fundamental questions regarding dengue pathogenesis are as yet to be answered, and only autopsy studies may help answer these questions: What is the precise phenotype/identity of dengue-infected cells? What is the nature of the inflammatory response? What is the link between viral infection and inflammatory process? The answer to the first question in particular is important in order to assess the safety and efficacy of vaccine and drug candidates using relevant cell culture assays. Myanmar represents one of the few dengue endemic countries in which

dengue autopsy studies are possible.

Other comments:

1. The eAsia board members' involvement in facilitating approvals of budget and other necessary paper work will help speed up the collaborative research.
2. The discussion group identified two potential proposals for submission. The first proposal focuses on identification of non-dengue pathogens, and it will involve collaborations among Dr. Thu (Myanmar), Dr. Safari (Indonesia), and Dr. Hasabe (Japan). The second project will focus on investigating dengue viral genetic diversity associated with dengue disease in infants vs adult dengue cases in Myanmar. The dengue proposal will involve Drs. Thu and Aye (Myanmar), Dr. Hasabe (Japan), and Dr. Shresta (USA).

Group 3, Discussion Summary: Infectious Diseases and Cancer

Dr. Paul C Pearlman

Science Policy Advisor/Program Officer, NIH, NCI, Center for Global Health

Working Group 3 discussed the increasing burden of cancers in Southeast Asia and the associated infectious etiologies of many of these. In particular, special attention was paid to cervical, oral, and liver cancers. The first two of these both represent significant burdens of disease and are highly amenable to preventative interventions when neoplasia are detected early. Liver cancers are more difficult to treat, but represent a very significant burden of disease in the region and resource appropriate preventative measures must be studied.

The first class of infection associated cancers discussed were those associated with the human papillomavirus (HPV). Cervical cancer is the number 4 killer of women worldwide and disproportionately affects low- and middle-income countries (LMICs). The vast majority of cervical cancer cases are due to the chronic infection of two subtypes of HPV. To design appropriate interventions for the region, it is first important to understand the burden of HPV associated cancers. Furthermore, it is important to characterize the genotypes of HPV most prevalent among at-risk groups. It is also important to characterize the burden of other HPV associated cancers (e.g., oral, anal, penile) when designing interventions. Furthermore, it is important to disambiguate the role of non-infectious risk factors in the presence of chronic HPV infections.

HIV/AIDS associated malignancies were also discussed in detail. It is important to note that HIV/AIDS associated malignancies have not disappeared in the era of cART. Rather, patients living longer with impaired immune systems has resulted in an increase in cancers associated with opportunistic infections. Because those cancers most usually associated with HIV/AIDS (e.g., KS, non-Hodgkin's Lymphoma) do not represent the most significant burdens in HIV+ individuals in SE Asia, the group noted that increases in cervical cancers, due to opportunistic HPV infections, lung cancers, and hepatocellular carcinomas, due to co-infections with Hepatitis C among injection drug users, were of particular interest. The group also noted the importance of disambiguating the role of non-infectious risk factors when studying these cancers.

Liver cancers were also addressed in detail. In particular, the group was focused on understanding the HBV/HCV burden, especially in light of ongoing programs in all of the countries to control these viruses. Furthermore, the participants from Thailand and Cambodia were particularly interested in understanding the prevalence of liver flukes and methods for detecting liver fluke infection early.

The group also briefly touched on the importance of Epstein Barr associated cancers, particularly head/neck and naso-pharyngeal cancers in SE Asia, and the high incidence of helicobacter pylori associated gastric cancers in some Asian nations.

Key challenges identified by the group include those countries who will require political leadership to allow them to participate in research programs, especially those whose research must directly tie into public policy. It was also mentioned that it is difficult to ensure cooperation and coordination among key stakeholders in many countries. Funding is a challenge for all of the countries only allowing in-kind participation. Finally, human resource capacity is a major challenge, especially concerning research trial design and implementation knowledge that is lacking in many of the clinical centers.

Closing Remarks

Dr. Kiyoshi Kita
Professor, University of Tokyo

Thank you, Gray. It is very clear introduction about e-Asia JRP provided by you.

Distinguished guests and participants, on behalf of the organizers and sponsors of the e-ASIA Scientific Workshop, it's indeed my pleasure to make a few closing remarks to all of you.

Initially, I plan to just sum up two day's presentations and also make a conclusion, but I don't do it, because it is already clearly mentioned by moderators including challenging scopes over future plans. However, to make sure to them, I would like to ask moderators and the guys who made presentation at the last session. Please prepare the summary of the groups by the end of this month and send it to Mr. Maeda or Ms. Sakai. This is very important. The members of each session, please help the moderator.

By attending this meeting, all of you have understood what e-Asia is and how to apply the call. One of important thing is, as already mentioned several times in the workshop, to make a new research network. As you know, some new collaborations have already started in this meeting. But some people are still looking for colleagues for new networks, for example, Dr. Khin's group in Myanmar. They are looking for the partner for drug discovery from natural resources. Also, Dr. Koike from Japan is looking for colleagues who are working with him about enterovirus 71. So, please feel free to contact somebody with whom you want to start the new collaboration.

I would like to express final gratitude to NIAID, NCI, University of Maryland and AMED as sponsors, and to Myanmar MOST for nice preparation and management of the workshop as well as to all of the people attending the workshop for your great discussion, especially for the session 4.

Finally, I hope this workshop will contribute not only to promote scientists' network but also to develop regional science leading to overcome the current medical problems in this region. I hope your returning safely and your network will start soon. Thank you very much for your attendance.

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27	U.S.	Mr. F. Gray Handley	National Institute of Allergy and Infectious Diseases (NIAID)	Associate Director for International Research Affairs
28	U.S.	Dr. Paul C Pearlman	National Cancer Institute (NCI)	Health Science Policy Analyst

29	U.S.	Dr. Myaing Nyunt	IGH	
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57	Myanmar	Prof. Soe Aung	University of Medicine (1)	Former Professor and Head of Medical Oncology
58	Myanmar	Dr. Kyi Kyi Thin	University of Medicine (1)	Emeritus Professor

Photos



Professor Kita, Program Officer of e-ASIA program at AMED, gave the opening remarks.



Many questions from participants generated heated discussions, involving moderators and speakers.



Group discussions were held with participants split up into three groups on day two.

Group 1: Drug-Resistant Malaria and Tuberculosis

Group 2: Emerging Viral Diseases

Group 3: Infectious Diseases and Cancer



Group photo with all participants