4th International Conference on

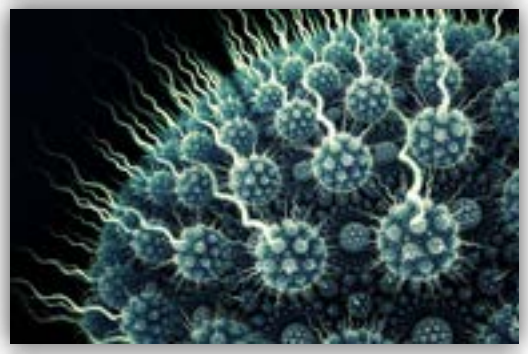
Tropical Medicine Infectious Diseases & Public Health

September 7-8, 2017 | Edinburgh, Scotland

Keynote Forum

Day 1



Shigeyuki Kano

Narional Centre of Global Health and Medicine, Japan

THE DETECTION OF HIDDEN PLASMODIUM INFECTION IN LAOS

Microscopy and malaria rapid diagnostic tests (RDTs) are used to diagnose malaria in the Lao PDR. In order to evaluate the performance of a highly sensitive PCR technique in comparison to microscopy and the RDTs, as well as to understand the precise malaria situation, a small pilot study was conducted in a highly endemic Attapeu province in 2015. 381 volunteers from villages in Attapeu participated in the survey. Microscopy, RDTs and a real-time nested PCR were used to detect Plasmodium infections and their results were compared. The numbers of infections detected by the 3 methods were as follows: 1 P. falciparum and 2 P. vivax by microscopy; 2 P. falciparum and 3 P. vivax by RDTs; and 35 Plasmodium including 2 P. falciparum, 32 P. vivax and 1 mixed infection by the PCR. All the participants with parasitemia were asymptomatic showing body temperatures of <37.1°C. It was reported in the "World Malaria Report 2016" that the malaria burden in the Lao PDR was, as a whole, decreasing, but our present study provide that many asymptomatic Plasmodium carriers were in the study area, of whom P. vivax was the dominant species as high as 94.3%. In fact, Ministry of Health of Lao PDR has declared that malaria is to be eliminated by 2030 in the country. To achieve this goal, highly sensitive diagnostic tests including PCR-based diagnostic methods should be employed, and targeted elimination plans for the hidden P. vivax infections should be designed and implemented.

Biography

Shigeyuki Kano is director of the department of tropical medicine and malaria, research institute, national center for global health and medicine, japan. He is President of Japanese Society of Tropical Medicine, and presently, Board Member of the Japanese Society of Parasitology, member of ASTMH, Fellow of RSTMH. He is serving as an advisor to Japan International Cooperation Agency (JICA) for the malaria control project under Japanese ODA and as a TRP member of Global Fund. He also belongs to Institut Pasteur du Laos as Head of Lao-Japan Parasitology Laboratory under SATREPS (JICA/AMED) Project.

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Victoria Chalker

Public Health England, United Kingdom

LEPPTOSPIROSIS: THE USE OF MULTI LOCUS SEQUENCE TYPING AND DERRIVED SPECIES IDENTIFCATION DIRECTLY ON CLINICAL SPECIMENS

Leptospirosis is a worldwide zoonotic disease caused by Pathogenic Leptospira. In the UK, Leptospirosis disease and surveillance previously depended on laboratory data from culture and the Microscopic Agglutination Test (MAT) considered gold standard methods for detection of infection. Traditional Leptospira species identification requires an isolate, however culture is time-consuming taking several weeks and requires significant laboratory expertise to visualise live Leptospires. Indigenous and imported human leptospirosis is detected in England and Wales, with 40-100 laboratory confirmed cases per year. It is likely that there are further cases which are undiagnosed, particularly those with milder manifestations. Small outbreaks are detected intermittently, the most recent being a cluster of cases associated with a triathlon in 2014. The combined clinical diagnostic and reference service provided by the Rare and Imported Pathogens Laboratory (RIPL, PHE Porton) and the Bacteriology Reference Department (BRD, PHE Colindale) developed a nested MLST method for use directly on clinical specimens that enables direct identification of the species and simultaneous typing of pathogenic Leptospires. Clinical DNA specimen extracts, submitted to the Leptospira Reference Unit underwent 16s qPCR testing, MLST typing and species identification. The reasons for referral ranged from occupational exposure to holiday acquired infection and common clinical symptoms included: flu like symptoms, fever and kidney or liver symptoms.

Biography

Victoria Chalker studied Medical Microbiology BSc from the University of Newcastle, quorum sensing PhD (Nottingham University/Umea University, Sweden) and has worked on pathogen discovery from Royal Veterinary College, led Molecular Microbiology Unit for UK NEQAS for Microbiology, gained Clinical Scientist status, STI and respiratory bacterial infection specialist scientist Public Helath England and is now Head, Respiratory & Vaccine Preventable Bacteria Reference Unit, PHE with remit for several microbial genera including Streptococci, Legionella and Leptospira and seconded to the Office of the Chief Scientific Officer, NHS England focussing on diagnostics and antimicrobial resistance. She has more than 50 papers and 4 patents.

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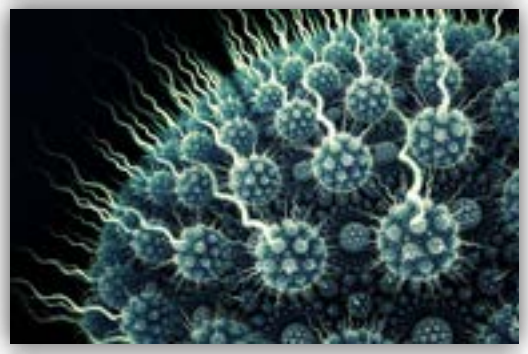

Ranjan Ramasamy

ID-FISH Technology Incorporation, USA

FLUORESCENCE IN SITU HYBRIDIZATION (FISH) ASSAYS FOR DIAGNOSING MALARIA IN ENDEMIC AREAS

Malaria is a responsible for approximately 600 thousand deaths worldwide every year. Appropriate and timely treatment of malaria can prevent deaths but is dependent on accurate and rapid diagnosis of the infection. Currently, microscopic examination of the Giemsa stained blood smears is the method of choice for diagnosing malaria. Although it has limited sensitivity and specificity in field conditions, it still remains the gold standard for the diagnosis of malaria. Here, we report the development of a fluorescence in situ hybridization (FISH) based method for detecting malaria infection in blood smears and describe the use of an LED light source that makes the method suitable for use in resource-limited malaria endemic countries. The *Plasmodium* Genus (P-Genus) FISH assay has a *Plasmodium* genus specific probe that detects all five species of *Plasmodium* known to cause the disease in humans. The P. falciparum (PF) FISH assay and P. vivax (PV) FISH assay detect and differentiate between P. falciparum and P. vivax respectively from other *Plasmodium* species. The FISH assays are more sensitive than Giemsa. The sensitivities of P-Genus, PF and PV FISH assays were found to be 98.2%, 94.5% and 98.3%, respectively compared to 89.9%, 83.3% and 87.9% for the detection of *Plasmodium*, P. falciparum and P. vivax by Giemsa staining respectively.

Biography

Ranjan Ramasamy graduated from the University of Cambridge, UK and then obtained a PhD also from the University of Cambridge. He has since held academic appointments in the UK and abroad including Australia, Sri Lanka and the USA. He was the Chairman of the National Science Foundation of Sri Lanka, Professor of Life Sciences at the Institute of Fundamental Studies in Kandy in Sri Lanka, Professor of Biochemistry in the University of Jaffna in Jaffna Sri Lanka, Professor of Immunology in the University Brunei Darussalam Medical School and held institute/ university appointments at the Scripps Clinic and Research Foundation in La Jolla in the USA, University of Nairobi in Kenya, King Faisal University in Dammam in Saudi Arabia, the Queensland Institute of Medical Research in Australia, Anglia Ruskin University in England and the London School of Hygiene and Tropical Medicine in England. He has more than 200 publications in fields pertaining to Medical Sciences.

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Sergio Wittlin

Swiss Tropical and Public Health Institute, Switzerland

NOVEL ANTIMALARIAL COMPOUND ACT-451840: PRECLINICAL ASSESSMENT

Addressing the urgent need for the development of new antimalarials, a chemical class of potent antimalarial compounds with a novel mode of action was recently identified. Here, the preclinical characterization of one of these compounds, ACT-451840, conducted in partnership with academic and industrial groups is presented. The properties of ACT-451840 are described, including its spectrum of activities against multiple life cycle stages of the human malaria parasite Plasmodium falciparum (asexual and sexual) and Plasmodium vivax (asexual) as well as oral in vivo efficacies in two murine malaria models that permit infection with the human and the rodent parasites P. falciparum and Plasmodium berghei, respectively. In vitro, ACT-451840 showed a 50% inhibition concentration of 0.4 nM against the drug-sensitive P. falciparum NF54 strain. The 90% effective doses in the in vivo efficacy models were 3.7 mg/kg against P. falciparum and 13 mg/kg against P. berghei. ACT-451840 potently prevented male gamete formation from the gametocyte stage with a 50% inhibition concentration of 6 nM and dose-dependently blocked oocyst development in the mosquito with a 50% inhibitory concentration of 30 nM. The compound's preclinical safety profile is presented and is in line with the published results of the first-in-man study in healthy male participants, in whom ACT-451840 was well tolerated. The fast parasite reduction ratio (PRR) and gametocytocidal effect of ACT-451840 were recently also confirmed in a clinical proof-of-concept (POC) study.

Biography

Sergio Wittlin is a group leader at the Swiss Tropical and Public Health Institute (Swiss TPH). He received his PhD in biochemistry from the Biozentrum of the University of Basel, Switzerland in 1999 and obtained a 3 years of postdoctoral experience in molecular genetics at the Walter and Eliza Hall Institute at Melbourne, Australia. In 2002 he moved to the Swiss TPH, where his research is focused on the malaria parasite in cell culture assays and mouse models, with the ultimate aim to discover new antimalarial drugs in a multidisciplinary approach. In 15 years of collaboration with the Medicines for Malaria Venture (MMV) in Geneva, his laboratory was significantly involved in moving 4 compounds in the MMV pipeline into clinical trials.

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