



Bulletin 220 | 3 August 2009

From K&S

From 27 July - 10 August we will deliver the summer editions of MalariaWorld. These issues will not include the News items, but mainly focus on publications and announcements. We will capture the main news items on our website at <http://www.malariaworld.org/> under the section Newsflash.

Inga

Publications

Open access

Research article: Malaria-related perceptions and practices of women with children under the age of five years in rural Ethiopia

Deressa W, Ali A

BMC Public Health 2009, 9:259 (23 July 2009)

Malaria remains to be the major cause of morbidity and mortality among pregnant women and children in Ethiopia. The aim of this study was to investigate the local perceptions, practices and treatment seeking behaviour for malaria among women with children under the age of five years. <http://tinyurl.com/n5fmy3>

Open access

Research paper: An observational study of children with sickle cell disease in Kilifi, Kenya

Manish Sadarangani, Julie Makani, Albert N. Komba, Tolu Ajala-Agbo, Charles R. Newton, Kevin Marsh and Thomas N. Williams

British Journal of Haematology, Early View, Published Online: 23 Jul 2009

Globally, sickle cell disease (SCD) has its highest prevalence and worst prognosis in sub-Saharan Africa. Nevertheless, relatively few studies describe the clinical characteristics of children with SCD in this region. We conducted a prospective observational study of children with SCD attending a specialist out-patient clinic in Kilifi, Kenya. <http://tinyurl.com/ljhclj>

Open access



Letter: Potential Malaria Reemergence, Northeastern Thailand

Trevor Petney, Paiboon Sithithaworn, Rojchai Satrawaha, Carl Grundy-Warr, Ross Andrews, Yi-Chen Wang, and Chen-Chieh Feng
EID Journal Home, Volume 15, Number 8–August 2009

Predicting the likelihood of a disease outbreak should make it possible to start surveillance programs before outbreaks occur and to initiate control programs before the population has become seriously affected. We used data on changes in land use patterns to predict the likelihood of malaria reemergence in northeastern Thailand. <http://tinyurl.com/npcmed>

Open access

Research: A stratified random survey of the proportion of poor quality oral artesunate sold at medicine outlets in the Lao PDR - implications for therapeutic failure and drug resistance

Sivong Sengaloundeth et al.

Malaria Journal 2009, 8:172 (28 July 2009)

An original and interesting piece of work that attempts to fill a gap in knowledge with regards to both research methodology in counterfeit drugs and the problem of artemisinin monotherapy. The results are very concerning and have important policy implications. <http://tinyurl.com/nz2ruh>

Open access

Research: Major variations in malaria exposure of travellers in rural areas: an entomological cohort study in western Cote d'Ivoire

Eve Orlandi-Pradines et al.

Malaria Journal 2009, 8:171 (28 July 2009)

Malaria remains a major threat, to both travellers and military personnel deployed to endemic areas. The recommendations for travellers given by the World Health Organization is based on the incidence of malaria in an area and do not take the degree of exposure into account. The aim of this article is to evaluate the exposure of travellers by entomologic methods, which are the commonly used measures of the intensity of malaria transmission. <http://tinyurl.com/ncfolm>

Open access

Research: Agriculture and the promotion of insect pests: swamp rice cultivation and malaria vectors in The Gambia



Lamin BS Jarju, Ulrike Fillinger, Clare Green, Vasilis Louca, Silas Majambere, Steven W Lindsay

Malaria Journal 2009, 8:170 (27 July 2009)

This study provides important new information on vector breeding in relation to traditional rice farming in West Africa. Ecological data like these are urgently needed. <http://tinyurl.com/mzvz93>

Open access

Research: Safety of epoietin beta-quinine drug combination in children with cerebral malaria in Mali

Stephane Picot et al.

Malaria Journal 2009, 8:169 (24 July 2009)

The paper is a timely contribution on a topic of great interest to researchers and clinicians who deal with severe malaria: can erythropoietin decrease poor neurologic outcomes in children with severe malaria? <http://tinyurl.com/nnd27y>

Open access

Methodology: Immunophoretic rapid diagnostic tests as a source of immunoglobulins for estimating malaria seroprevalence and transmission intensity

Geoffrey S Williams et al.

Malaria Journal 2009, 8:168 (22 July 2009)

An interesting and useful paper that various groups exploring the place of sero-epidemiology as a tool for managing malaria control will find helpful. <http://tinyurl.com/ks5oa2>

Open access

News: Malaria Becoming More Drug Resistant

Katharine Sanderson

Nature, 29 July 2009, doi:10.1038/news.2009.750

Artemisinin-based medicines fail a growing number of patients in Cambodia. <http://tinyurl.com/lxg8eq>

Open access

Perspective: Unraveling the Impact of Malaria Exposure Before Birth

Hviid L

PLoS Med 6(7): e1000117

Lars Hviid discusses a research article in PLoS Medicine that explores whether prenatal exposure to malaria is associated with increased susceptibility to malarial infection and anemia in infancy. <http://tinyurl.com/lawh32>



Open access

PolicyForum: Focusing on Quality Patient Care in the New Global Subsidy for Malaria Medicines

Moon S, Pérez Casas C, Kindermans J-M, de Smet M, von Schoen-Angerer T

PLoS Med 6(7): e1000106

Tido von Schoen-Angerer and colleagues discuss the new Affordable Medicines Facility for malaria (AMFm), which subsidizes and facilitates access to artemisinin-based combination therapy, and what mechanisms are needed to ensure it stays focused on quality patient care. <http://tinyurl.com/l7dsso>

Open access

Can Prenatal Malaria Exposure Produce an Immune Tolerant Phenotype?: A Prospective Birth Cohort Study in Kenya

Malhotra I, Dent A, Mungai P, Wamachi A, Ouma JH, et al.

PLoS Med 6(7): e1000116

In a prospective cohort study of newborns residing in a malaria holoendemic area of Kenya, Christopher King and colleagues find a subset of children born to malaria-infected women who acquire a tolerant phenotype, which persists into childhood and is associated with increased susceptibility to malarial infection and anemia.

<http://tinyurl.com/ndsku3>

Open access

Interference with Hemozoin Formation Represents an Important Mechanism of Schistosomicidal Action of Antimalarial Quinoline Methanols

Corrêa Soares JBR, Menezes D, Vannier-Santos MA, Ferreira-Pereira A, Almeida GT, et al.

PLoS Negl Trop Dis 3(7): e477

In the present work, we investigated the effects of three antimalarial compounds, quinine (QN), quinidine (QND) and quinacrine (QCR) in a murine schistosomiasis model by using a combination of biochemical, cell biology and molecular biology approaches. <http://tinyurl.com/mk78lr>

Open access

Safety and Efficacy of Dihydroartemisinin-Piperaquine in Falciparum Malaria: A Prospective Multi-Centre Individual Patient Data Analysis

Zwang J, Ashley EA, Karema C, D'Alessandro U, Smithuis F, et al.



PLoS ONE 4(7): e6358

The fixed dose antimalarial combination of dihydroartemisinin-piperaquine (DP) is a promising new artemisinin-based combination therapy (ACT). We present an individual patient data analysis of efficacy and tolerability in acute uncomplicated falciparum malaria, from seven published randomized clinical trials conducted in Africa and South East Asia using a predefined in-vivo protocol. <http://tinyurl.com/lkn3vj>

[Open access](#)

A Potent Malaria Transmission Blocking Vaccine Based on Codon Harmonized Full Length Pfs48/45 Expressed in *Escherichia coli*

Chowdhury DR, Angov E, Kariuki T, Kumar N

PLoS ONE 4(7): e6352

A vaccine targeting sexual stages of the parasite will not only reduce malaria transmission by female *Anopheles* mosquitoes, but also reduce the spread of parasites able to evade immunity elicited by vaccines targeting pre-erythrocytic and erythrocytic asexual stages. We focused our studies on Pfs48/45, a protein expressed in the sexual stages developing within an infected person and one of the most promising transmission-blocking vaccine targets. <http://tinyurl.com/kmae7s>

Malaria in Pregnant Woman Masquerading as HELLP Syndrome

Ducarme, Guillaume; Thuillier, Claire; Wernet, Anne; Bellier, Claire; Luton, Dominique

Amer J Perinatol, Online First, DOI: 10.1055/s-0029-1234035

Malaria may be complicated by development of thrombocytopenia, elevated liver enzymes, and/or hemolysis, which may be difficult to distinguish from HELLP (hemolytic anemia; elevated liver enzymes; low platelet count) syndrome in a pregnant patient. A 33-year-old woman developed a HELLP-like syndrome and persistent fever postpartum without symptoms of preeclampsia. A malaria blood smear was performed and was positive for *Plasmodium falciparum*. The patient was immediately treated with quinine. <http://tinyurl.com/mmkzfc>

Resistance to Chloroquine by *Plasmodium vivax* at Alor in the Lesser Sundas Archipelago in Eastern Indonesia

Inge Sutanto, Sri Suprijanto, Nurhayati, Paul Manoempil, and J. Kevin Baird



Am J Trop Med Hyg 2009;81 338-342

The therapeutic response to standard chloroquine therapy against *Plasmodium vivax* was evaluated in 36 subjects living at Alor in the Lesser Sundas Archipelago of eastern Indonesia. Chloroquine levels were measured on 32 individuals, and showed evidence of adequate absorption of standard chloroquine therapy. <http://tinyurl.com/l2afu7>

Use of a Histidine-Rich Protein 2-Based Rapid Diagnostic Test for Malaria by Health Personnel during Routine Consultation of Febrile Outpatients in a Peripheral Health Facility in Yaounde, Cameroon

Collins Sayang, Georges Soula, Rachida Tahar, Leonardo K. Basco, Pierre Gazin, Roger Moyou-Somo, and Jean Delmont

Am J Trop Med Hyg 2009;81 343-347

The role of a rapid diagnostic test (RDT) in the case management of *Plasmodium falciparum* malaria infections has not been determined in Africa. Our study was conducted during November 2007–January 2008 to assess test accuracy of an RDT in the management of febrile outpatients in a peripheral urban health facility in Cameroon. <http://tinyurl.com/metwd7>

Assessment of the Origins and Spread of Putative Resistance-Confering Mutations in *Plasmodium vivax* Dihydropteroate Synthase

Vivian N. Hawkins et al.

Am J Trop Med Hyg 2009;81 348-355

No abstract available <http://tinyurl.com/ld4x3c>

A Randomized, Double-Blind, Safety and Tolerability Study to Assess the Ophthalmic and Renal Effects of Tafenoquine 200 mg Weekly versus Placebo for 6 Months in Healthy Volunteers

Kevin J. Leary et al.

Am J Trop Med Hyg 2009;81 356-362

A randomized, double-blind, placebo-controlled study was conducted to assess the effect of tafenoquine, 200 mg weekly for 6 months on ophthalmic and renal safety. The results of this study showed no clinically significant effects of tafenoquine on ophthalmic or renal function, and support its continued development as an antimalarial drug. <http://tinyurl.com/nk2t83>



Short report: Common Genotypic Polymorphisms in Glutathione S-Transferases in Mild and Severe Falciparum Malaria in Tanzanian Children

Reginald A. Kavishe et al.

Am J Trop Med Hyg 2009;81 363-365

Malaria infection induces oxidative stress in the host cells. Antioxidant enzymes such as glutathione S-transferases (GSTs) are responsible for fighting reactive oxygen species and reduction of oxidative stress. Common GST polymorphisms have been associated with susceptibility to different diseases whose pathologies involve oxidative stress. In this study, we tested the hypothesis that GST polymorphisms that lead to reduced or lack of enzyme activity are associated with severe Plasmodium falciparum malarial anemia. <http://tinyurl.com/Incyvt>

Quantitative Determination of Plasmodium vivax Gametocytes by Real-Time Quantitative Nucleic Acid Sequence-Based Amplification in Clinical Samples

Martijn Beurskens, Petra Mens, Henk Schallig, Din Syafruddin, Puji Budi Setia Asih, Rob Hermsen, and Robert Sauerwein

Am J Trop Med Hyg 2009;81 366-369

Microscopic detection of Plasmodium vivax gametocytes, the sexual life stage of this malaria parasite, is insensitive because P. vivax parasitaemia is low. To detect and quantify gametocytes a more sensitive, quantitative real-time Pvs25-QT-NASBA based on Pvs25 mRNA was developed and tested in two clinical sample sets from three different continents. <http://tinyurl.com/nbarnn>

Spatial expansion and population structure of the neotropical malaria vector, Anopheles darlingi (Diptera: Culicidae)

Pedro M. Pedro, Maria A. M. Sallum

Biological Journal of the Linnean Society, Volume 97, Issue 4, Date: August 2009, Pages: 854-866, DOI 10.1111/j.

1095-8312.2009.01226.x

Extensive population structuring is known to occur in Anopheles darlingi, the primary malaria vector of the Neotropics. We analysed the phylogeographic structure of the species using the mitochondrial cytochrome oxidase I marker. The results obtained contribute to our understanding of gene flow in this species and allow the formulation of human mosquito health protocols in light of the potential population differences in vector capacity or tolerance to control strategies. <http://tinyurl.com/kwfjvx>



Spiroadamantyl 1,2,4-trioxolane, 1,2,4-trioxane, and 1,2,4-trioxepane pairs: Relationship between peroxide bond iron(II) reactivity, heme alkylation efficiency, and antimalarial activity

Xiaofang Wang et al.

Bioorganic & Medicinal Chemistry Letters, Volume 19, Issue 16, 15 August 2009, Pages 4542-4545, doi:10.1016/j.bmcl.2009.07.013

These data suggest that iron(II) reactivity for a set of homologous spiroadamantyl 1,2,4-trioxolane, 1,2,4-trioxane, and 1,2,4-trioxepane peroxide heterocycles is a necessary, but insufficient, property of antimalarial peroxides. Heme alkylation efficiency appears to give a more accurate prediction of antimalarial activity than FeSO₄-mediated reaction rates, suggesting that antimalarial activity is not merely dependent on peroxide bond cleavage, but also on the ability of reactive intermediates to alkylate heme or other proximal targets. <http://tinyurl.com/mqvbde>

Review Article: Receptor targeting of hemoglobin mediated by the haptoglobins: roles beyond heme scavenging

Marianne Jensby Nielsen and Søren Kragh Moestrup

Blood, 23 July 2009, Vol. 114, No. 4, pp. 764-771, DOI 10.1182/blood-2009-01-198309

In conclusion, variant human homologous hemoglobin-binding proteins that collectively may be designated the haptoglobins have diverted from the haptoglobin gene. On hemoglobin and receptor interaction, these haptoglobins contribute to different biologic events that go beyond simple removal from plasma of the toxic hemoglobin. <http://tinyurl.com/lxg8eq>

Fluorinated Quinine Alkaloids: Synthesis, X-ray Structure Analysis and Antimalarial Parasite Chemotherapy

Christoph Bucher, Christof Sparr, W. Bernd Schweizer, Ryan Gilmou
Chemistry - A European Journal, Volume 15, Issue 31, Date: August 3, 2009, Pages: 7637-7647, DOI 10.1002/chem.200900505

Herein we report the synthesis of a series of C₉-fluorinated quinine alkaloids by direct nucleophilic deoxyfluorination. This transformation gives rise to products bearing both S- and R-configured monofluoromethylene functionalities, consistent with an S_N1-like mechanism. <http://tinyurl.com/ks9npc>

Antimalarial artemisinin and tetraoxane endoperoxides behave differently in the oxidative degradation of unsaturated phospholipid



Naokazu Kumura et al.

Chemistry and Physics of Lipids, Volume 160, Supplement 1, August 2009, Pages S28-S29

No abstract available <http://tinyurl.com/lk6ck6>

Functional dissection of the catalytic carboxyl-terminal domain of human malaria parasite Plasmodium falciparum origin recognition complex subunit 1 (PfORC1)

Ashish Gupta, Parul Mehra, Abhijeet Deshmukh, Ashraf Dar, Pallabi Mitra, Nilanjan Roy, and Suman Kumar Dhar

Eukaryotic Cell, EC Accepts, published online ahead of print on 24 July 2009, doi:10.1128/EC.00170-09

These results not only provide us a useful system to study function of the essential genes in Plasmodium, it helps us to identify the previously undiscovered unique features of replication proteins in general. <http://tinyurl.com/n7r3gy>

Review Article: Pharmacology: Current status of malaria chemotherapy and the role of pharmacology in antimalarial drug research and development

Kesara Na-Bangchang, Juntra Karbwan

Fundamental & Clinical Pharmacology, Volume 23, Issue 4, Date: August 2009, Pages: 387-409, DOI 10.1111/j.1472-8206.2009.00709.x

Pharmacologists have been working in close collaboration with scientists in other disciplines of science/biomedical sciences for more understanding on the biology of the parasite, host, in order to exploit rational design of drugs. Multiple general approaches to the identification of new antimalarials are being pursued at this time. All should be implemented in parallel with focus on the rational development of new agents directed against newly identified parasite targets. With major advances in our understanding of malaria parasite biology coupled with the completion of the malaria genome, has presented exciting opportunities for target-based antimalarial drug discovery. <http://tinyurl.com/kncsq8>

A variant in the gene FUT9 is associated with susceptibility to placental malaria infection

Martin Sikora et al.

Human Molecular Genetics 2009 18(16):3136-3144; doi:10.1093/hmg/ddp240

Studies of genetic susceptibility to malaria have so far focused on infant malaria, with only a few studies investigating the genetic



basis of placental malaria, focusing only on a limited number of candidate genes. The aim of this study therefore was to identify novel host genetic factors involved in placental malaria infection. <http://tinyurl.com/lpy9ky>

Cytokine Profiles in Peripheral, Placental and Cord Blood in an Area of Unstable Malaria Transmission in Eastern Sudan

Nada K. Bayoumi, Khalid H. Bakhet, Ahmed A. Mohmmed, Ahmed M. Eltom, Mustafa I. Elbashir, Elie Mavoungou, and Ishag Adam
J Trop Pediatr 2009 55: 233-237; doi:10.1093/tropej/fmn062.

Understanding the cytokine interactions that underlie both control and disease should be helpful when investigating the pathogenesis of malaria during pregnancy. Few data exists concerning pathogenesis of malaria during pregnancy in areas of unstable malaria transmission. <http://tinyurl.com/nrsllt>

Editorial: Maintaining momentum for malaria elimination

The Lancet

The Lancet, Volume 374, Issue 9686, 25 July 2009-31 July 2009, Page 266, doi:10.1016/S0140-6736(09)61347-7

Refers to: Countries race to contain resistance to key antimalarial
The Lancet, Volume 374, Issue 9686, 25 July 2009-31 July 2009, Pages 277-280, Udani Samarasekera <http://tinyurl.com/mo7zfv>

Special Report: Countries race to contain resistance to key antimalarial

Udani Samarasekera

The Lancet, Volume 374, Issue 9686, 25 July 2009-31 July 2009, Pages 277-280, doi:10.1016/S0140-6736(09)61349-0

Refers to: Maintaining momentum for malaria elimination
The Lancet, Volume 374, Issue 9686, 25 July 2009-31 July 2009, Page 266, The Lancet <http://tinyurl.com/mcz6n4>

Correspondence: Home management of malaria Franco Pagnon

The Lancet, Volume 374, Issue 9686, 25 July 2009-31 July 2009, Pages 288-289, doi:10.1016/S0140-6736(09)61358-1

Referred to by: Home management of malaria – Authors' reply
The Lancet, Volume 374, Issue 9686, 25 July 2009-31 July 2009, Page 289, SG Staedke, N Mwebaza, MR Kanya, PJ Rosenthal, CJM Whitty <http://tinyurl.com/mohuow>

Correspondence: Home management of malaria – Authors' reply



SG Staedke, N Mwebaza, MR Kanya, PJ Rosenthal, CJM Whitty
The Lancet, Volume 374, Issue 9686, 25 July 2009-31 July 2009,
Page 289, doi:10.1016/S0140-6736(09)61359-3

Refers to: Home management of malaria, The Lancet, Volume 374,
Issue 9686, 25 July 2009-31 July 2009, Pages 288-289, Franco
Pagnoni <http://tinyurl.com/n3ks47>

Correspondence: Home management of malaria

Jamie Erskine

The Lancet, Volume 374, Issue 9686, 25 July 2009-31 July 2009,
Pages 289-290, doi:10.1016/S0140-6736(09)61360-X

No Abstract <http://tinyurl.com/lstdse>

Environemnt: Galapagos penguins harbour malaria threat

Catherine Brahic

The New Scientist, 22 July 2009-08-03

Penguins and malaria are not two organisms you would normally
associate with each other, yet biologists have found the malaria
parasite in an endangered species of the black-and-white waddlers.

<http://tinyurl.com/l94lj3>

Letter: Malaria catastrophe

Patrick Davey

The New Scientist, Volume 203, Issue 2718, 22 July 2009, Page 26,
doi:10.1016/S0262-4079(09)61959-X

No abstract available <http://tinyurl.com/llu4nz>

Prevalence of avian malaria parasite in mosquitoes collected at a zoological garden in Japan

Hiroko Ejiri et al.

Parasitology Research, Issue Volume 105, Number 3 / September,
2009 : 629 - 633, DOI 10.1007/s00

Several species of captive birds at zoological gardens of Japan were
found to be infected with avian Plasmodium. However, incriminated
vector mosquito species have not been identified yet. To indicate
the competent vectors of avian malaria parasite, we collected
mosquitoes at a zoological garden in Japan and examined for the
avian malaria parasite DNA. <http://tinyurl.com/n9xn6o>

Differentially expressed genes between female and male adult Anopheles anthropophagus

Yi-Jie Geng, Shi-Tong Gao, Da-Na Huang, Yi-Rui Zhao, Jian-ping Liu,
Xiao-Heng Li, Ren-Li Zhang



Parasitology Research, Issue Volume 105, Number 3 / September, 2009 : 843-851, DOI 10.1007/s00436-009-1470-5

The aim of the present study was to identify sex-specific genes in adult *Anopheles anthropophagus*. As the major malaria vector and *Brugia malayi* vector in the Asian continent, female *Anopheles* mosquitoes take blood meals and transmit pathogens through this pathway, while males are nectar feeders. This complex behavior is controlled at several levels, but is probably initiated by the genetic background difference between these two groups. <http://tinyurl.com/kwjqr>

Antiplasmodial β -hydroxydihydrochalcone from seedpods of *Tephrosia elata*

Lois M. Muiva et al.

Phytochemistry Letters, Volume 2, Issue 3, 24 August 2009, Pages 99-102, doi:10.1016/j.phytol.2009.01.002

From the seedpods of *Tephrosia elata*, a new β -hydroxydihydrochalcone named (S)-elatadihydrochalcone was isolated. In addition, the known flavonoids obovatachalcone, obovatin, obovatin methyl ether and deguelin were identified. The structures were determined on the basis of spectroscopic evidence. The crude extract and the flavonoids obtained from the seedpods of this plant showed antiplasmodial activities. The literature NMR data on β -hydroxydihydrochalcones is reviewed and the identity of some of the compounds assigned β -hydroxydihydrochalcone skeleton is questioned. <http://tinyurl.com/mezdwz>

Jobs

Research Scientist (FAO/IAEA), at the International Atomic Energy Agency, Austria

Deadline for application: 11 September 2009

The Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture is looking for a young scientist to join the research team of the mosquito project developing the Sterile Insect Technique (SIT) for *An. arabiensis* at the Entomology Unit of the FAO/IAEA Agriculture & Biotechnology Laboratory of the IAEA's Laboratories in Seibersdorf, Austria.

The candidate should have an advanced university degree, preferably a PhD student or postdoc in medical entomology or



equivalent. The candidate will assist the research team with the development of appropriate mass-rearing technologies for mosquitoes and to conduct R&D on mosquito mating behaviour, mosquito biology, radiation, genetic sexing, sterile male quality control, etc. US citizenship is required to be eligible, the person should not be over 32 years of age, and be willing to relocate to Austria. A two-year commitment is expected. Remuneration is set at the P2 level of the UN salary scale.

Please contact Marc Vreysen (0043 1 2600 28404, m.vreysen@iaea.org) for more information.

For more info on the activities of the Insect Pest Control subprogramme, visit: <http://www-naweb.iaea.org/nafa/ipc/index.html>

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