



Bulletin 219 | 27 July 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: High, clustered, nucleotide diversity in the genome of *Anopheles gambiae* revealed through pooled-template sequencing: implications for high-throughput genotyping protocols

Wilding CS, Weetman D, Steen K, Donnelly MJ

BMC Genomics 2009, 10:320 (16 July 2009)

The high frequency and clustering of SNPs has important ramifications for the design of high-throughput genotyping assays based on allele specific primer extension or probe hybridisation. We illustrate these issues in the context of the design of Illumina GoldenGate assays. <http://tinyurl.com/loqsmw>

Open access

Research Article: Malaria at Parturition in Nigeria: Current Status and Delivery Outcome

Olugbenga A. Mokuolu et al.

Infectious Diseases in Obstetrics and Gynecology, Volume 2009 (2009), Article ID 473971, 7 pages, doi:10.1155/2009/473971

To evaluate the current status of malaria at parturition and its impact on delivery outcome in Nigeria. In Nigeria, maternal age <20 years was the most important predisposing factor to malaria at parturition. The main impacts on pregnancy outcome were a twofold increase in rate of maternal anaemia and higher prevalence of LBW. <http://tinyurl.com/ma52ku>

Open access



Case report: Invasive *Aspergillus fumigatus* infection after *Plasmodium falciparum* malaria in an immuno-competent host: case report and review of literature

Isabella Eckerle et al.

Malaria Journal 2009, 8:167 (20 July 2009)

This is a well-documented and interesting case report of a patient with proven invasive aspergillosis complicating the course of a falciparum malaria attack with high parasitaemia, in which the patient survived. <http://tinyurl.com/mf3p2m>

Open access

Research: Impact of *Plasmodium falciparum* infection on the frequency of moderate to severe anaemia in children below 10 years of age in Gabon

Marielle K Bouyou-Akotet et al.

Malaria Journal 2009, 8:166 (20 July 2009)

An extensive study in 8,000 febrile children confirms the dominant role of malaria in the pathogenesis of anaemia in African children. <http://tinyurl.com/n67pl7>

Open access

Research: Epidemiology of malaria in an area prepared for clinical trials in Korogwe, north-eastern Tanzania

Bruno P Mmbando et al.

Malaria Journal 2009, 8:165 (18 July 2009)

A study describing four cross sectional surveys of three different settings (rural highland, rural lowland and semi-urban lowland) over a two-year time period with a view of acquiring a baseline for future clinical trials. <http://tinyurl.com/me4ruo>

Open access

Methodology: An informatics model for guiding assembly of telemicrobiology workstations for malaria collaborative diagnostics using commodity products and open-source software

West Suhanic, Ian Crandall, Peter Pennefather

Malaria Journal 2009, 8:164 (17 July 2009)

The system, once fully developed, may be a good tool for malaria microscopy quality assessment. <http://tinyurl.com/kpnzle>

Open access



Research: Satisfactory safety and immunogenicity of MSP3 malaria vaccine candidate in Tanzanian children aged 12-24 months

John PA Lusingu et al.

Malaria Journal 2009, 8:163 (17 July 2009)

Paper describing a double-blind, randomized, controlled, dose escalating phase Ib clinical trial in 45 children. Both doses of MSP3 appear to be well tolerated and able to elicit strong specific IgG1 and IgG3 responses. <http://tinyurl.com/ncs56f>

[Open access](#)

Research: Malaria ookinetes exhibit multiple markers for apoptosis-like programmed cell death in vitro

Arambage SC, Grant KM, Pardo I, Ranford-Cartwright L, Hurd H
Parasites & Vectors 2009, 2:32 (15 July 2009)

We have confirmed previous reports that Plasmodium ookinetes display multiple signs that suggest they die by a mechanism resembling apoptosis. This occurs in vivo and in vitro without experimental application of triggers. Our findings support the hypothesis that non-necrotic mechanisms of cell death evolved before the advent of multicellular organisms. <http://tinyurl.com/mauy15>

[Open access](#)

Policy Forum: 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. doi:10.1371/journal.pmed.1000106

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/l7dso>

[Open access](#)

A Comparative Proteomic Analysis of the Simple Amino Acid Repeat Distributions in Plasmodia Reveals Lineage Specific Amino Acid Selection

Dalby AR

PLoS ONE 4(7): e6231. doi:10.1371/journal.pone.0006231

The study shows that simple amino acid repeat distributions can be used to group related species and to examine their phylogenetic



relationships. This study also shows that an outgroup species with a similar A–T content can be distinguished based only on the amino acid usage in repeats, and suggest that this might be a useful feature for proteome clustering. The lineage specific use of amino acids in repeat regions suggests that comparative studies of SAAR distributions between proteomes gives an insight into the mechanisms of expansion and the selective pressures acting on the organism. <http://tinyurl.com/lmbwkf>

Open access

Letter To The Editor: Response to “Poor control vaccines in two randomised trials of malaria vaccine?”

Philip Bejon, Salim Abdulla, John Lusingu, Ally Olotu, Amanda Leach, Marc Lievens, Marcel Tanner, Lorenz von Seidlein

Vaccine, Volume 27, Issue 35, 30 July 2009, Pages 4745-4746, doi: 10.1016/j.vaccine.2009.05.035

We note the comments of Dr. Aaby [1] on 4 March 2009 regarding the use of control vaccinations in our recent studies of RTS,S/AS01E in 5–17-month-old children [2] and RTS,S/AS02D combined with the EPI schedule in young infants [3] S. Abdulla, R. Oberholzer, O. Juma, S. Kubhoja, F. Machera and C. Membi et al., Safety and immunogenicity of RTS, S/AS02D previous term malarianext term vaccine in infants, *N Engl J Med* 359 (24) (2008), pp. 2533–2544. View Record in Scopus | Cited By in Scopus (9)[3]. <http://tinyurl.com/lrtaoa>

Effect of agricultural activities on prevalence rates, and clinical and presumptive malaria episodes in central Côte d’Ivoire

Benjamin G. Koudou et al.

Acta Tropica, Volume 111, Issue 3, September 2009, Pages 268-274, doi:10.1016/j.actatropica.2009.05.006

Agricultural activities, among other factors, can influence the transmission of malaria. In two villages of central Côte d’Ivoire (Tiémélékro and Zatta) with distinctively different agro-ecological characteristics, we assessed *Plasmodium* prevalence rates, fever and clinically confirmed malaria episodes among children aged 15 years and below by means of repeated cross-sectional surveys.

<http://tinyurl.com/kqcfmq>

Efficacy of oral single dose therapy with artemisinin–naphthoquine phosphate in uncomplicated falciparum malaria



Thein Tun, Hla Soe Tint, Khin Lin, Thar Tun Kyaw, Moe Kyaw Myint, Win Khaing, Zaw Win Tun

Acta Tropica, Volume 111, Issue 3, September 2009, Pages 275-278, doi:10.1016/j.actatropica.2009.05.007

All artemisinin-based combination therapies (ACTs), recommended by the World Health Organization, are 3-day regimens. A considerable level of non-compliance on ACTs has been reported from some countries. The study aimed to assess the therapeutic efficacy of single dose treatment with new generation ACT containing artemisinin plus naphthoquine. <http://tinyurl.com/m6fcq8>

Evaluation of the performance of CareStart™ Malaria Pf/Pv Combo and Paracheck Pf® tests for the diagnosis of malaria in Wondo Genet, southern Ethiopia

Bekele Sharew, Mengistu Legesse, Abebe Animut, Daddi Jima, Girmay Medhin, Berhanu Erko

Acta Tropica, Volume 111, Issue 3, September 2009, Pages 321-324, doi:10.1016/j.actatropica.2009.05.014

To evaluate the diagnostic performance of CareStart™ Malaria Pf/Pv Combo test relative to microscopy for the diagnosis of falciparum and vivax malaria in Ethiopia. <http://tinyurl.com/l2coxu>

Enhancement of artemisinin concentration and yield in response to optimization of nitrogen and potassium supply to Artemisia annua

Michael J. Davies

Annals of Botany 2009 104(2):315-323; doi:10.1093/aob/mcp126

The resurgence of malaria, particularly in the developing world, is considerable and exacerbated by the development of single-gene multi-drug resistances to chemicals such as chloroquinone. The present study aims to determine how plant biomass can be enhanced while maximizing artemisinin concentration by understanding the plant's nutritional requirements for nitrogen and potassium. <http://tinyurl.com/lh4u89>

Mechanisms of Resistance: Novel pfdhps Haplotypes among Imported Cases of Plasmodium falciparum Malaria in the United Kingdom

Colin J. Sutherland et al.

Antimicrob. Agents Chemother. 2009 53: 3405-3410, doi:10.1128/AAC.00024-09



Treatment of acute malaria caused by *Plasmodium falciparum* may include long-half-life drugs, such as the antifolate combination sulfadoxine-pyrimethamine (SP), to provide posttreatment chemoprophylaxis against parasite recrudescence or delayed emergence from the liver. An unusual case of *P. falciparum* recrudescence in a returned British traveler who received such a regimen, as well as a series of 44 parasite isolates from the same hospital, was analyzed by PCR and direct DNA sequencing for the presence of markers of parasite resistance to chloroquine and antifolates. <http://tinyurl.com/nq7rzk>

Mechanisms of Action: Stability of Peroxide Antimalarials in the Presence of Human Hemoglobin

Darren J. Creek et al.

Antimicrob. Agents Chemother. 2009 53: 3496-3500, doi:10.1128/AAC.00363-09

Peroxide antimalarials, including artemisinin, are important for the treatment of multidrug-resistant malaria. These peroxides are known to react with iron or heme to produce reactive intermediates that are thought to be responsible for their antimalarial activities. This study investigated the potential interaction of selected peroxide antimalarials with oxyhemoglobin, the most abundant form of iron in the human body. <http://tinyurl.com/mq77xr>

Pharmacology: Pharmacokinetics and Ex Vivo Pharmacodynamic Antimalaria Activity of Dihydroartemisinin-Piperaquine in Patients with Uncomplicated *Falciparum* Malaria in Vietnam

Dao Van Hoang Nguyen et al.

Antimicrob. Agents Chemother. 2009 53: 3534-3537, doi:10.1128/AAC.01717-08

Compared to healthy subjects, malaria patients show a reduction in the mean oral clearance (1.19 versus 5.87 liters/h/kg of body weight) and apparent volume of distribution (1.47 versus 8.02 liters/kg) of dihydroartemisinin in Vietnamese patients following treatment with dihydroartemisinin-piperaquine (Artekin) for uncomplicated *Plasmodium falciparum*. Dihydroartemisinin is responsible for most of the ex vivo antimalarial activity of dihydroartemisinin-piperaquine. <http://tinyurl.com/m8ebbn>

Mechanisms of Resistance: Analysis of Single-Nucleotide Polymorphisms in the *crt-o* and *mdr1* Genes of *Plasmodium*



vivax among Chloroquine-Resistant Isolates from the Brazilian Amazon Region

Pamela Orjuela-Sánchez et al.

Antimicrob. Agents Chemother. 2009 53: 3561-3564, doi:10.1128/AAC.00004-09

Plasmodium vivax parasites with chloroquine resistance (CQR) are already circulating in the Brazilian Amazon. Complete single-nucleotide polymorphism (SNP) analyses of coding and noncoding sequences of the *pvm*dr1 and *pv*crt-o genes revealed no associations with CQR, even if some mutations had not been randomly selected. In addition, striking differences in the topologies and numbers of SNPs in these transporter genes between *P. vivax* and *P. falciparum* reinforce the idea that mechanisms other than mutations may explain this virulent phenotype in *P. vivax*. <http://tinyurl.com/mhlz47>

Experimental Therapeutics: Evaluation of Artemisone Combinations in Aotus Monkeys Infected with Plasmodium falciparum

Nicanor Obaldia III et al.

Antimicrob. Agents Chemother. 2009 53: 3592-3594, doi:10.1128/AAC.00471-09

Artemisone (single oral dose, 10 mg/kg of body weight) cured nonimmune *Aotus* monkeys of their *Plasmodium falciparum* infections when combined with mefloquine (single oral dose, 5 and 10 mg/kg but not 2.5 mg/kg). In combination with amodiaquine (20 mg/kg/day), artemisone (10 mg/kg/day) given orally for 3 days cured all infected monkeys. Three days of treatment with artemisone (30 mg/kg/day) and clindamycin (100 mg/kg/day) was also curative. <http://tinyurl.com/nntm6z>

Plasmodium blood parasite found in endangered Galapagos penguins (Spheniscus mendiculus)

Iris I. Levin, Diana C. Outlaw, F. Hernán Vargas, Patricia G. Parker
Biological Conservation, In Press, Corrected Proof, Available online 19 July 2009

This is the first report of a *Plasmodium* blood parasite found in the Galapagos Archipelago. Phylogenetic analyses place this parasite, recovered from endangered Galapagos penguins (*Spheniscus mendiculus*), within the genus *Plasmodium*, and suggest a close relationship to some of the most dangerous lineages of *Plasmodium* that have been known to cause severe mortality and morbidity in captive penguin populations. <http://tinyurl.com/km2xlo>



The Longin Domain Regulates the Steady-state Dynamics of Sec22 in *P. falciparum*

Lawrence Ayong, Avanthi Raghavan, Timothy G. Schneider, Theodore F. Taraschi, David A. Fidock, and Debopam Chakrabarti
Eukaryotic Cell doi:10.1128/EC.00092-09

The specificity of vesicle-mediated transport is largely regulated by the membrane-specific distribution of SNARE proteins. However, the signals and machineries involved in SNARE protein targeting to their respective intracellular locations are not fully understood. We have identified a Sec22 ortholog in *Plasmodium falciparum* (PfSec22) that contains an atypical insertion of the *Plasmodium* export element within the N-terminal longin domain. <http://tinyurl.com/my7byf>

Antimalarial pharmacodynamics of chalcone derivatives in combination with artemisinin against *Plasmodium falciparum* in vitro

Amit Bhattacharya, Lokesh C. Mishra, Manish Sharma, Satish K. Awasthi, Virendra K. Bhasin

European Journal of Medicinal Chemistry, Volume 44, Issue 9, September 2009, Pages 3388-3393, doi:10.1016/j.ejmech.2009.02.008

This is the first report showing antiplasmodial interactions between artemisinin and synthetic chalcone azole derivatives. Thus, chalcones and artemisinin combinations open the possibility of novel ACTs. <http://tinyurl.com/lab32a>

Original Articles: Synthesis and antiprotozoal activities of dicationic bis(phenoxyethyl)benzenes, bis(phenoxyethyl)naphthalenes, and bis(benzyloxy)naphthalenes

Donald A. Patrick et al.

European Journal of Medicinal Chemistry, Volume 44, Issue 9, September 2009, Pages 3543-3551, doi:10.1016/j.ejmech.2009.03.014

A series of 37 dicationically substituted bis(phenoxyethyl)benzene bis(phenoxyethyl)naphthalene, and bis(benzyloxy)naphthalene analogues of pentamidine was prepared and evaluated for antiprotozoal activities and cytotoxicity in in vitro. <http://tinyurl.com/ox5jct>



Short Communication: Synthesis, antimalarial evaluation and molecular modeling studies of hydroxyethylpiperazines, potential aspartyl protease inhibitors, Part 2

Wilson Cunico et al.

European Journal of Medicinal Chemistry, Volume 44, Issue 9, September 2009, Pages 3816-3820, doi:10.1016/j.ejmech.2009.03.041

The antimalarial activity of hydroxyethylamines, synthesized from the reaction of intermediated hydroxyethylpiperazines with benzenesulfonyl chlorides or benzoyl chlorides, has been evaluated in vitro against a W2 Plasmodium falciparum clone. Some of the nineteen tested derivatives showed a significant activity in vitro, thus turning into a promising new class of antimalarials. In addition, a molecular modeling study of the most active derivative (5I) was performed and its most probable binding modes within plasmeptin II enzyme were identified. <http://tinyurl.com/kvcvm5>

Commentary: Clinical development of malaria vaccines: Should earlier trials be done in malaria endemic countries?

Chilengi R.

Hum Vaccin. 2009 Sep 31;5(9)., Epub ahead of print

This paper outlines some of the key issues along the pathway and proposes the need for much earlier phase clinical research within Africa suggesting rationale and ethical justification for doing so. Challenge model studies could particularly be employed within malaria endemic country settings which may have critical advantages to complement the currently available sites in developed countries. <http://tinyurl.com/ntlp4j>

Minireview: Approaches to Malaria Vaccine Development Using the Retrospectroscope

Vanessa Sarda, David C. Kaslow, and Kim C. Williamson

Infect. Immun. 2009;77 3130-3140

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

Gene sequencing, modelling and immunolocalization of the protein disulfide isomerase from Plasmodium chabaudi

Carlos Novo, Tiago M. Martins, Sofia Prata, Ângela Lopes, Ana Armada

International Journal of Biological Macromolecules, In Press, Accepted Manuscript, Available online 15 July 2009

We here describe the sequencing of the gene coding for the PDI from P. chabaudi and analyse the relationship to its counterpart



enzymes, particularly with the PDI from other Plasmodium species. <http://tinyurl.com/m7xslb>

Community Effectiveness of Artemisinin-Based Combination Therapy for Malaria in Rural Southwestern Nigeria

O. B. Yusuf, C. O. Falade, I. O. Ajayi, G. O. Gbotosho, T. C. Happi, F. Pagnoni

International Quarterly of Community Health Education, Volume 29, Number 1 / 2008-2009 : 45 - 56

A descriptive cross sectional survey using an interviewer-administered questionnaire was carried out among 700 caregivers whose children had fever during the previous two weeks. The aim was to determine the community effectiveness of malaria treatment using arthemeter-lumefantrine (AL) among under-5-year-olds in a rural community in southwestern Nigeria. <http://tinyurl.com/mcvv3m>

Mating Competitiveness of Anopheles arabiensis Males as a Function of Transgenic State and Genetic Similarity to Females

P. I. Howell and M. Q. Benedict

Journal of Insect Behavior, Online First, 10.1007/s10905-009-9187-y

We conducted mating competitions between wild-type and heterozygous transgenic *Anopheles arabiensis* males that were produced by repeated backcrosses of a transposable element expressing the β 2-tubulin eGFP marker into two genetic backgrounds. These competed for genetically similar or dissimilar females in ratios of 1:1:3. <http://tinyurl.com/laccao>

Rapid detection of point mutations in Plasmodium falciparum genes associated with antimalarial drugs resistance by using High-Resolution Melting analysis

Valérie Andriantsoanirina et al.

Journal of Microbiological Methods, Volume 78, Issue 2, August 2009, Pages 165-170, doi:10.1016/j.mimet.2009.05.013

We have developed a High-Resolution DNA Melting method to detect mutations related to *Plasmodium falciparum* resistance. This method is based on real-time PCR followed by High Resolution Melting ramping from 67 °C to 80 °C with fluorescence data acquisition set at 0.1 °C increments. <http://tinyurl.com/na7z5q>

Media Watch: Malaria: a mother's journey



Talha Burki

The Lancet Infectious Diseases, Volume 9, Issue 8, August 2009,
Page 472, doi:10.1016/S1473-3099(09)70196-3

No abstract available. <http://tinyurl.com/m5v5rv>

Impact of the IL-4 -590 C/T transition on the levels of Plasmodium falciparum specific IgE, IgG, IgG subclasses and total IgE in two sympatric ethnic groups living in Mali

Manijeh Vafa, Bakary Maiga, Elisabeth Israelsson, Amagana Dolo, Ogobara K. Doumbo, Marita Troye-Blomberg

Microbes and Infection, Volume 11, Issues 8-9, July-August 2009,
Pages 779-784, doi:10.1016/j.micinf.2009.04.017

This study aimed to examine the effect of IL-4 -590 T/C polymorphism on the levels of malaria-specific IgE, IgG, IgG (1-4) subclasses as well as total IgE in the Fulani and their sympatric ethnic group, the Dogon, in Mali. Asymptomatic individuals, of the Fulani and the Dogon ethnic groups, were included in the study. Taken together, these data indicate that the impact of IL-4 -590 variants on antibody levels may vary in different ethnic populations, and that this might affect the Ig-class and subclass distributions.

<http://tinyurl.com/lkaycp>

Naturally acquired hemozoin by monocytes promotes suppression of RANTES in children with malarial anemia through an IL-10-dependent mechanism

Tom Were et al.

Microbes and Infection, Volume 11, Issues 8-9, July-August 2009,
Pages 811-819, doi:10.1016/j.micinf.2009.04.021

Regulated upon activation, normal T-cell expressed, and secreted (RANTES, CCL-5) is an important immunoregulatory mediator that is suppressed in children with malarial anemia (MA). Although pro-inflammatory (e.g., TNF- α , IL-1 β and IFN- γ) and anti-inflammatory (e.g., IL-4, IL-10 and IL-13) cytokines regulate RANTES production, their effect on RANTES in children with MA has not been determined. <http://tinyurl.com/mhxxjv>

Letter: Evolution of a malaria resistance gene in wild primates

Jenny Tung, Alexander Primus, Andrew J. Bouley, Tonya F. Sevenson, Susan C. Alberts, Gregory A. Wray

Nature 460, 388-391 (24 June 2009) doi:10.1038/nature08149

The study of a population of yellow baboons in Amboseli National Park in Kenya reveals the first reported association and functional



characterization linking genetic variation and a complex trait — susceptibility to malaria — in a natural population of nonhuman primates. <http://tinyurl.com/noc62m>

Research Highlight: Parasitology: Plasmodium protein portal

Nature Reviews Microbiology 7, p550 (August 2009) | doi:10.1038/nrmicro2194

No abstract available. <http://tinyurl.com/mqguk7>

Enzymatic characterization of the Plasmodium vivax chitinase, a potential malaria transmission-blocking target

Satoru Takeo, Daisuke Hisamori, Shusaku Matsuda, Joseph Vinetz, Jetsumon Sattabongkot, Takafumi Tsuboi

Parasitology International, Volume 58, Issue 3, September 2009, Pages 243-248, doi:10.1016/j.parint.2009.05.002

The chitinase (EC 3.2.1.14) of the human malaria parasite *Plasmodium falciparum*, PfCHT1, has been validated as a malaria transmission-blocking vaccine (TBV). The present study aimed to delineate functional characteristics of the *P. vivax* chitinase PvCHT1, whose primary structure differs from that of PfCHT1 by having proenzyme and chitin-binding domains. <http://tinyurl.com/mhp32k>

Short Communication: Cross-reactivity in rapid diagnostic tests between human malaria and zoonotic simian malaria parasite Plasmodium knowlesi infections

Satoru Kawai, Makoto Hirai, Kosuke Haruki, Kazuyuki Tanabe, Yuichi Chigusa

Parasitology International, Volume 58, Issue 3, September 2009, Pages 300-302, doi:10.1016/j.parint.2009.06.004

Plasmodium knowlesi has a relatively broad host range extending to humans, in whom it causes zoonotic malaria. Recent studies have shown that human infection with *P. knowlesi* is widely distributed in forested areas of Southeast Asia. In the present study, we evaluated commercial rapid diagnostic tests (RDTs) for human malaria to assess their reactivity and sensitivity in detecting *P. knowlesi* parasites using blood samples obtained from infected monkeys. <http://tinyurl.com/kmtbrc>

Stepwise acquisition of pyrimethamine resistance in the malaria parasite

Elena R. Lozovsky et al.

PNAS July 21, 2009 vol. 106 no. 29 12025-12030



The spread of high-level pyrimethamine resistance in Africa threatens to curtail the therapeutic lifetime of antifolate antimalarials. We studied the possible evolutionary pathways in the evolution of pyrimethamine resistance using an approach in which all possible mutational intermediates were created by site-directed mutagenesis and assayed for their level of drug resistance. <http://tinyurl.com/nmoqpy>

Estimation of parasite load using Rapid diagnostic test ICT @Now Malaria P.f/P.v in Plasmodium falciparum malaria



Najia K. Ghanchi; Mohammad A. Beg; Rabia Hussain
Scandinavian Journal of Infectious Diseases, DOI: 10.1080/00365540903022832

Rapid tests such as ICT Malaria are an effective field tool in determining the presence of malarial parasites but do not provide an estimate of parasite load. We have evaluated the utility of ICT for providing semi-quantitative estimates of parasite load. <http://tinyurl.com/mqrtqn>

Cytochrome P450 - Dependent Toxic Effects of Primaquine on Human Erythrocytes

Shobana Ganesan, Babu L. Tekwani, Rajnish Sahu, Lalit M. Tripathi and Larry A. Walker

Toxicology and Applied Pharmacology, Article in Press, Accepted Manuscript

Primaquine, an 8-aminoquinoline, is the drug of choice for radical cure of relapsing malaria. Use of primaquine is limited due to its hemotoxicity, particularly in populations with glucose-6-phosphate dehydrogenase deficiency [G6PD(-)]. Biotransformation appears to be central to the anti-infective and hematological toxicities of primaquine, but the mechanisms are still not well understood.

<http://tinyurl.com/ntdsm6>

Age-dependent systemic antibody responses and immunisation-associated changes in mice orally and nasally immunised with Lactococcus lactis expressing a malaria parasite protein

S.A.V. Moorthy, S.G. Yasawardena, R. Ramasamy

Vaccine, Volume 27, Issue 36, 6 August 2009, Pages 4947-4952, doi:10.1016/j.vaccine.2009.06.011



Gram positive food-grade bacteria such as lactococci have significant advantages over attenuated pathogens as vaccine delivery vehicles because of their inherently greater safety. Plasmodium falciparum merozoite surface antigen 2 (MSA2) was expressed in recombinant Lactococcus lactis both intracellularly and covalently anchored to the peptidoglycan of the cell wall (MSA2cP). <http://tinyurl.com/ljfbda>

Jobs

Medical Entomologist (P-4) at the International Atomic Energy Agency, Austria

Application Deadline: 24 August 2009

Issue Date: 8 July 2009

Duration: Fixed term temporary assistance post, 2 years

Duty Station: Seibersdorf, Austria

The Entomology Unit is one of five units in the FAO/IAEA Agriculture and Biotechnology Laboratory and is an integral part of the insect and pest control subprogramme. This subprogramme assists Member States in the implementation of environmentally-friendly and sustainable methods to control major insect pests of plants, livestock and humans through strategic and applied research, technology transfer, capacity building, policy advice and information management. The subprogramme focuses on the development and implementation of area-wide integrated pest management (AW-IPM) approaches involving the sterile insect technique (SIT) to enhance food security, improve human health, introduce sustainable agricultural systems, reduce losses and pesticide use, preserve biological diversity, and facilitate international trade in food and agricultural commodities, etc.

The Medical Entomologist, as a member of the insect pest control subprogramme and reporting to the Head of the Entomology Unit, develops appropriate technologies for an outcome-based strategy to assess the feasibility of SIT for mosquitoes and provides technical expertise and support for field feasibility studies.



The medical entomologist is: (1) a team leader of scientists and technical staff carrying out R&D and technology transfer activities in relation to mosquito SIT; (2) a programme planner, providing input on programme planning and evaluation, and; (3) a promoter pro-actively attracting extrabudgetary funds for the mosquito SIT activities.

More information or <http://tinyurl.com/llzumy>

Don't forget to mention **MalariaWorld** when replying to this advert.

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>



Don't forget to mention **MalariaWorld** when replying to this advert.

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