

activity of bacterial DNA. These results demonstrate that schizont extracts contain a novel and previously unknown ligand for TLR9, and suggest that the stimulatory effects of this ligand on PDCs may play a key role in immunoregulation and immunopathogenesis of human falciparum malaria.

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MEASURING ALLELIC HETEROGENEITY IN *PLASMODIUM FALCIPARUM* BY HETERODUPLEX TRACKING ASSAY

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We developed a novel *Plasmodium falciparum* genotyping strategy based on the heteroduplex tracking assay (HTA) method commonly used to genotype viruses. Because it can detect both sequence and size polymorphisms, we hypothesized that HTA is more sensitive than current methods. To test this hypothesis, we compared the ability of HTA and nested PCR to detect genetic diversity in seventeen Thai samples; although nested PCR detected more variants in 2/17 cases, HTA identified more *P. falciparum* strains in 9/17 cases, suggesting that HTA is equal to if not more sensitive than nested PCR. Furthermore, HTA differentiated between re-infection and recrudescence in seven paired admission and recurrent patient samples. This study is a proof of concept that HTA is a sensitive allelic discrimination method able to determine genetic diversity in *P. falciparum* and warrants its use in studies of antimalarial drug efficacy.

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A NEW METHOD FOR DETECTION OF *PFMDR1* MUTATIONS IN *PLASMODIUM FALCIPARUM* DNA USING REAL TIME PCR

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Background: Surveillance for drug-resistant *Plasmodium falciparum* should be a component of malaria control programmes. Real-time PCR methods for the detection of parasite single-nucleotide polymorphisms (SNPs) and gene amplification could be useful surveillance tools.

Methods: A real-time PCR assay has been developed that identifies single nucleotide polymorphisms (SNPs) at amino acids 86, 184, 1034 and 1042 in the *P. falciparum* multi-drug resistant (*pfmdr1*) gene that may be associated with anti-malarial drug resistance.

Results: This assay has a sensitivity and specificity of 94% and 100% when compared to traditional PCR methods for genotyping. Only 54 of 68 (79%) paired pre- and post-culture DNA samples were concordant at all four loci.

Conclusion: Real-time PCR is a sensitive and specific method to detect SNP's in *pfmdr1*. Genotypes of parasites after *in vitro* culture may not reflect that seen *in vivo*.

Malar J. 2004; 3(1): 9.

PLASMODIUM VIVAX TRANSMISSION: CHANCES FOR CONTROL?

Sattabongkot J, Tsuboi T, Zollner GE, Sirichaisinthop J and Cui L

Plasmodium vivax is a growing public health problem in many regions of the world as a result of re-emergence and increased transmission. This article reviews the unique biology related to *P. vivax* transmission and addresses potential problems associated with the control of this parasite, which depends on an in-depth knowledge of malaria transmission. The success of comprehensive control measures will require advanced laboratory and field research on this parasite, international awareness of the problem, and co-operation by members of the international malaria community to implement new knowledge and improve the management of transmission in each endemic area.

Trends Parasitol. 2004; 20(4): 192-8.

POTENT IMMUNOGENICITY OF DNA VACCINES ENCODING PLASMODIUM VIVAX TRANSMISSION-BLOCKING VACCINE CANDIDATES PVS25 AND PVS28-EVALUATION OF HOMOLOGOUS AND HETEROLOGOUS ANTIGEN-DELIVERY PRIME-BOOST STRATEGY

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Transmission-blocking vaccines target the sexual stages of the malaria parasite and prevent further development within the mosquito vector halting the transmission of the parasite. Zygote/ookinetes are potential targets of antibodies inhibiting oocyst development in the mosquito midgut and rendering mosquitoes non-infectious. DNA vaccine constructs were developed expressing Pvs25 and Pvs28 (*Plasmodium vivax* zygote/ookinete surface proteins) fused at the amino terminus with tissue plasminogen activator signal peptide. Antibodies produced in mice after immunization with three doses recognized respective antigens in the parasites and in an ELISA, and these antibodies when tested in membrane feeding assay were potent blockers of *P. vivax* transmission. Co-immunization with Pvs25 and Pvs28 DNA vaccine constructs did not affect the antigen specific antibody responses against individual antigens, and the antibodies remained effective in blocking parasite transmission demonstrating 91-99% reduction in