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?

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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

Kongkasuriyachai D, Bartels-Andrews L, Stowers A, Collins WE, Sullivan J, Sattabongkot J, Torii M, Tsuboi T and Kumar N

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 demon-strating 91-99% reduction in

oocyst number in the mosquito midgut. Several combinations of homologous and heterologous antigen-delivery prime boost strategy were also evaluated and the results suggested that antibody titers and transmission-blocking activities by the three prime-boost strategies (DNA prime/DNA boost, DNA prime/protein boost, and protein prime/protein boost) were comparable with slightly better immunogenicity of heterologous antigen-delivery prime/boost as compared to DNA/DNA alone. These results demonstrate potent immunogenicity of DNA vaccines encoding Pvs25 and Pvs28 and warrant further evaluation in non-human primates.

Vaccine. 2004; 22(23-24): 3205-13.

PRE-CLINICAL EVALUATION OF THE MALARIA VACCINE CANDIDATE *P. FALCIPARUM* MSP1$_{42}$ FORMULATED WITH NOVEL ADJUVANTS OR WITH ALUM

Pichyangkul S, Gettayacamin M, Miller RS, Lyon JA, Angov E, Tongtawe P, Ruble DL, Heppner DG Jr, Kester KE, Ballou WR, Diggs CL, Voss G, Cohen JD and Walsh DS

We compared the safety and immunogenicity of the recombinant *Plasmodium falciparum* MSP1$_{42}$ antigen formulated with four novel adjuvant systems (AS01B, AS02A, AS05 and AS08) to alum in rhesus monkeys. All five formulations of MSP1$_{42}$ were safe and immunogenic. Whereas, all MSP1$_{42}$ formulations tested generated high stimulation indices for lymphocyte proliferation (ranging from 27 to 50), the AS02A and AS01B formulations induced the highest levels of specific anti-MSP1$_{42}$ antibody. ELISPOT assays showed that the AS02A and AS01B vaccine formulations-induced different cytokine response profiles. Using the ratio of IFN-γ/IL-5 secreting cells as the metric, the AS01B formulation induced a strong Th1 response, whereas the AS02A formulation induced a balanced Th1/Th2 response. The IFN-γ response generated by AS02A and AS01B formulations persisted at least 24 weeks after final vaccination. The notable difference in Th1/Th2 polarization induced by the AS02A and AS01B formulations warrants comparative clinical testing.

Vaccine. 2004; 22(29-30): 3831-40.

REEMERGENCE AND PERSISTENCE OF VIVAX MALARIA IN THE REPUBLIC OF KOREA

Pacha L, Lee HS, Bradley K, Tobler S, Littlebird FD, Maza JP, Hemingway A, Pettit K, Baker A, Kim H, Lee W, Lee J, Yang B, Jung G and Klein TA

After the Republic of Korea (ROK, South Korea) was declared malaria-free in 1979, *Plasmodium vivax* malaria reemerged in 1993, putting Korea's military and civilians and US soldiers at risk for the disease. Our goals were to provide an overview of the reemergence and persistence of malaria in Korea, identify improvements for control, and assess the ongoing and future threat of malaria in Korea. We identified all reported malaria cases in ROK civilians, ROK military