IgG1 but minimal amounts of IgG2a suggesting that in the absence of interferon γ, immunopotentiation by CFA or LA-15-PH defaulted to TH2- mediated antibody responses. In contrast, antibody responses induced using liposomes showed a strong dependency on TH1- mediated pathway, as GKO mice failed to default to a TH2-like anti-MSP1 response of appreciable magnitude. On the other hand, B30-MDP/liposomes induced TH2-type antibodies in both GKO and heterozygous mice. Thus, incorporation of B30-MDP into liposome preparations completely reversed a TH1 response to a TH2 profile; while addition of LA-15-PH did not alter the TH1 profile but abrogated the strong dependency of this pathway for antibody response observed in liposome-adjuvanted immunization. Our study with a few adjuvants revealed a spectrum of requirements for interferon γ mediated pathway(s) for immunopotentiation, and such requirements are subjected to a dynamic influence among adjuvants. Similar investigations on other key elements of the immune pathways will provide better understanding of the mechanisms of immunopotentiation during active immunizations which are crucial to the rationale design of adjuvants for human vaccines.

/107 *IN VITRO* RESPONSES OF SENEGALESE ADULTS' PBMC TO RECOMBINANT $MSP1_{19}$ ANTIGENS DEPENDS ON EXPRESSION SYSTEMS AND/OR *PLASMODIUM FALCIPARUM* EXPOSURE. Garraud O*, Diouf A , Longacre S , Kaslow DC, Holder AA, Dieye A , Tall A , Roussihon C , Trape JF, Rogier C , Perraut R , and Mercereau-Puijalon O. Unité d'Immunologie, Institut Pasteur, Dakar, Sénégal; Immunologic Moléculaire des Parasites, Institut Pasteur, Paris, France; Laboratory of Parasitic Diseases, NIAID, NIH, Bethesda, MD; and National Institute for Medical Research, Mill Hill, London, UK.

To investigate the potential influence of antigen (Ag) presentation on the immune response to $MSPl_{19}$, the 19 kDa C-terminal domain of the *Plasmodium falciparum* MSP1 Ag, 3 recombinant $MSP1_{19}$ Ags expressed in baculovirus, *E. coli* and *Saccharomyces cerevisiae* were used to stimulate *in vitro* peripheral blood mononuclear cells (PBMCS) from *P. falciparum* immune adults with no recent history of clinical malaria. Donors were recruited in 2 Senegalese villages (Dielmo and Ndiop), where malaria transmission is perennial and seasonal, respectively. Each PBMC preparation was stimulated with a range of concentrations of the 3 recombinant Ags (cleaved from carrier molecules when appropriate). Most subjects responded to at least 1 recombinant Ag (SI > 3 in 8/10 at Dielmo and 14/15 at Ndiop). The dose-dependent response to the ISaccharomyces cerevisiael $MSPI_{19}$ was similar in both villages. In contrast, there was a 10-fold difference in the optimal concentration of the *E. coli* product between the two villages. Both the optimal dose and the concentration-dependence of the stimulation by the baculovirus recombinant protein differed in each setting. These studies show that the 3 recombinant antigens differ in their capacity to stimulate lymphocyte proliferation, suggesting that protein structure (folding and/or glycosylation) affecting Ag processing, is critical. Furthermore, these data suggest that the malaria transmission pattern influences the immune response to the various $MSP1_{19}$ recombinants.

108 EFFICACY OF PASSIVELY TRANSFERRED RABBIT ANTIBODY TO TWO DIFFERENT RECOMBINANT *PLASMODIUM FALCIPARUM* MSP-1 CONSTRUCTS IN INFECTED *AOTUS NANCYMAI*. Gozalo A*, Ballou WR, Lucas CM, Wellde B, Hall BT, Kumar S, Kaslow D, Haynes D, Lyon J, Bell B, Wood J, and Watts DM. U.S. Naval Medical Research Institute Detachment, Lima, Peru; Department of Immunology, Walter Reed Army Institute of Research, Washington, DC; Laboratory of Parasitic Diseases, National Institutes of Health, Bethesda, MD; and Department of Biologic Research, Walter Reed Army Institute of Research, Washington, DC.

Preliminary studies showed that a 19 Kd MSP-1 C terminal falciparum vaccine candidate protected *Aotus* monkeys against challenge when administered with Freund's adjuvant. Because Freund's adjuvant is known to induce both cellular and humoral immunity, it is important to determine the relative role of antibodies in limiting infection. Purified rabbit Ig raised against the homologous (FVO) and heterologous (3D7) recombinant MSP=1 were passively transferred to malaria naive *Aotus* monkeys (2 per group) which were then challenged along with positive and negative control monkeys with 5×10^4 *Plasmodium falciparum* (FVO) infected erythrocytes. When compared to controls, neither rabbit Ig conferred protection. All monkeys became parasitemic on day 4 or 5 and required treatment between days 10 and 14 when parasitemias ranged from 4-14%. Two positive control monkeys which received *Aotus* anti-FVO antibodies did not develop parasitemia until days 14 and 18. One monkey was treated on day 43 when the parasitemia rose to 2.1%, the other monkey's parasitemia never rose above 0.5% and was not treated. Rabbit anti-MSP IgG were found to have *in vitro* growth inhibitory activity against homologous parasites. These results indicated that antibodies alone, directed against the C terminal region of the MSP-1 candidate vaccine may not have been the principal mechanism by which the vaccine conferred protection in the [Aotus] model.

109 INDUCTION AND KINETICS OF CD8+ T CELL RESPONSE IN MICE IMMUNIZED WITH MALARIAL SPOROZOITES. Tsuji M*, Murata K, Miyahira Y, Nussenzweig RS, and Zavala F. Department of Medical and Molecular Parasitology, New York University School of Medicine, New York, NY.

VOLUME 55 AUGUST 1996 NUMBER 2

PROGRAM AND ABSTRACTS OF THE 45TH ANNUAL MEETING OF THE AMERICAN SOCIETY OF TROPICAL MEDICINE AND HYGIENE

The Hyatt Regency
Baltimore, Maryland
December 1–5, 1996

Supplement to
THE AMERICAN JOURNAL OF
TROPICAL MEDICINE AND HYGIENE

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