

The development of exo-erythrocytic schizonts of *Plasmodium berghei* in vitro from gamma-irradiated and non-irradiated sporozoites: a study using confocal laser scanning microscopy

R. E. Sinden, A. Couchman, A. Suhrbier, F. Marsh, L. Winger and G. Ranawaka

Molecular and Cellular Parasitology Group, Department of Biology, Imperial College, London SW7 2BB

Confocal scanning laser microscopy has been used to study the distribution of antigens expressed by the liver stages of *Plasmodium berghei* in cultured hepatoma cells. The 3-dimensional images obtained of intact parasites clearly show complex patterns of antigen expression not apparent when using conventional IFAT or immunoelectron microscopy. A liver-stage specific antigen (Pbl 1) was shown to be confined to the parasitophorous vacuole; the vacuole has extensive diverticulae extending into the host cell. Small parasites were detected for the first time in 'mature' cultures. These did not represent a distinct population, but the 'tail' of a broad continuum of parasite sizes. Irradiated sporozoites produce a transient population of slow-growing parasites which express a very limited range of antigens *de novo* in the invaded hepatoma cell. A comparison of the reactivity of text-abstract EE parasites with anti-circumsporozoite antibody and with anti-Pbl 1 suggests that the former reagent may reliably be used to identify sporozoites invading host cells, but should not be used to determine the number of parasites that successfully undergo intrahepatic development. Anti-Pbl-1 indicates on 33% of invaded sporozoites identified by anti-CSP subsequently differentiate.

Key words: *Plasmodium berghei*, exo-erythrocytic, liver, schizont, ISI, antigen

Parasitology (1991), 103, 17-21 Cambridge University Press