

# Genus-specific nested polymerase chain reaction malaria detection assay for epidemiologic studies.

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## **Abstract:**

A nested polymerase chain reaction (PCR) assay that uses Plasmodium genus-specific primers for the initial PCR (nest 1) amplification and either genus- or species-specific primers for the nest 2 amplifications was tested on laboratory and field samples. With in vitro cultured Plasmodium falciparum-infected blood samples, it was capable of detecting six parasites/microl of blood using DNA prepared from 25-microl blood spots on filter paper. The assay was evaluated on fingerprick blood samples collected on filter paper from 129 individuals living in a malaria-endemic area in Malaysia. Malaria prevalence by genus-specific nested PCR was 35.6% (46 of 129) compared with 28.7% (37 of 129) by microscopy. The nested PCR detected seven more malaria samples than microscopy in the first round of microscopic examination, malaria in three microscopically negative samples, six double infections identified as single infections by microscopy and one triple infection identified as a double infection by microscopy. The nested PCR assay described is a sensitive technique for collecting accurate malaria epidemiologic data. When coupled with simple blood spot sampling, it is particularly useful for screening communities in remote regions of the world.