

# CHARACTERIZATION OF THE *PLASMODIUM* SPOROZOITE AND ERYTHROCYTIC STAGES (SES) PROTEIN

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## ABSTRACT

The *Plasmodium* sporozoite is infective for mosquito salivary glands and vertebrate host tissues. Although it is a key developmental stage of the malaria parasite, relatively few sporozoite surface or secreted proteins have been identified and characterized. A novel surface molecule, designated the Sporozoite and Erythrocytic Stage (SES) protein, is preferentially-expressed in salivary gland sporozoites versus oocyst and hemolymph sporozoites of *Plasmodium gallinaceum*. PgSES exhibits a spiral surface labeling pattern that overlays a known sporozoite surface antigen, the circumsporozoite protein, with only minor co-localization. It consists of 551 amino acids encoding a putative 63.2 kDa protein that has been shown to be expressed not only on particular sporozoite stages, but also during the erythrocytic stages. This novel protein has three conserved regions of unknown function that are present in eight *Plasmodium* spp. representing human, avian, non-human primate, and rodent malarias. Antibody blocking studies assessing the role of PgSES in sporozoite invasion of mosquito salivary glands show that anti-PgSES antibodies block invasion by 49-87%. The *Plasmodium falciparum* homolog, PfSES, also appears to have expression during the sporozoite and erythrocytic stages. Additional studies assessing the function of both PgSES and PfSES in the sporozoite and erythrocytic stages are being conducted. Ultimately, if the SES protein is found to be critical to parasite development and/or invasion of host tissues, it could be a target for novel malaria intervention efforts.