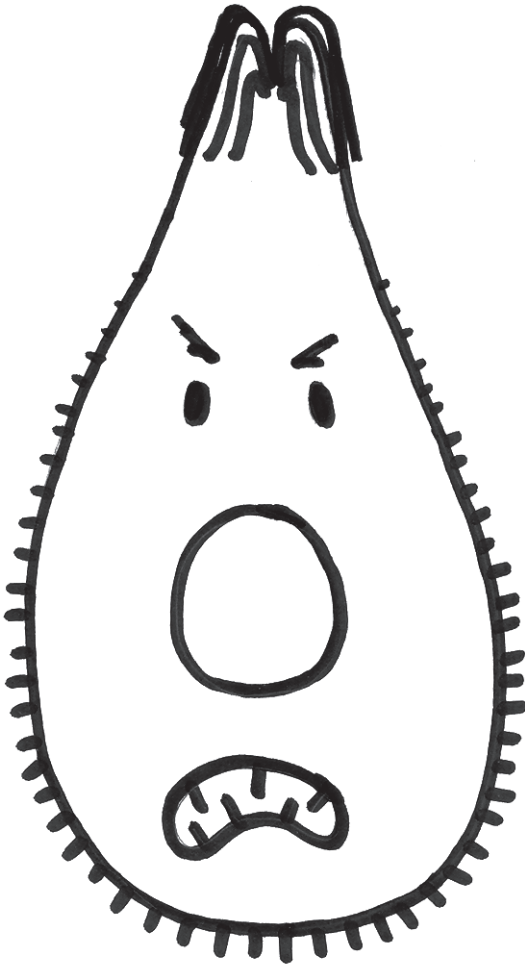


# WANTED

## LIVE OR ATTENUATED



**Name:** Plasmodium Falciparum  
(see also P. vivax, P. malariae, P. ovale)  
**AKA:** The malaria parasite, malaria

**Wanted for:** Causing one million deaths annually and 300 million infections.

### Characteristics:

Malaria is caused by a single-celled animal (protozoan) that is transmitted to, and between, humans by the Anopheles mosquito. The complex lifecycle initially involves migration to the liver for replication (sporozoite stage), then transmission to red blood cells (merozoite stage), infection of red blood cells followed by replication (trophozoite or 'ring' stage), release of further merozoites that then form into male and female gametocytes which are then taken up by the mosquito where they reproduce sexually - producing sporozoites that complete the cycle of transmission. During the trophozoite stage, multiple waves of reproduction, transmission and reinfection of further red blood cells occur producing fever, shivering and joint pain. Destruction of red blood cells causes anaemia and renal failure. The parasite also renders infected red blood cells 'sticky' affecting circulation and obstructing blood vessels, which in the context of cerebral malaria can be fatal.

### How can Immunology help?

This is another extremely tough proposition, but an effective vaccine producing neutralising antibodies would be the ideal solution – although other methodologies, such as reducing the mosquito population and employing insecticide impregnated mosquito nets are also vitally important. The difficulty lies in the complex life cycle of the organism and the fact that it remains hidden inside cells for long periods of time – effectively masking it from the immune system – only emerging for brief periods to migrate to the next stage of its life cycle. Frequent variation in the surface coat of the parasite presents additional challenges. Much research has focused on the sporozoite stage that infects the liver as it displays unchanging surface proteins that would be ideal candidates for a vaccine – however this stage takes only 30 minutes to reach and infect the liver, presenting an extremely narrow window of opportunity. The ultimate hope may lie in a vaccine addressing multiple stages of the life cycle – all-in-all this is a worthy, if deadly, adversary for Immunology researchers!

*Can you help? Immunology needs you!*