

ATTACKING MALARIA TRANSMISSION BY ISOLATING MALE AND FEMALE GAMETOCYTES

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The transmission stages of *Plasmodium falciparum*-gametocytes were the first malaria parasites identified. In order to eradicate malaria it will be necessary to ensure that populations of gametocytes can be cleared from patients in endemic areas. Gametocytes are sexually dimorphic and both sexes are required to complete the mosquito cycle of the parasite. Only the male or the female gametocyte therefore, needs to be neutralised. Despite much research, there are still many unanswered questions about gametocytes and their biology. Here we report on new techniques that have allowed us to differentially sort male and female gametocytes to perform further research. These methods rely on some unique biological properties of gametocytes that can be exploited by the use of flow cytometry. Using specific dyes, pure samples of either male or female gametocytes can now be sorted using flow cytometry. These gametocytes can be treated with anti-

malarial drugs to determine if the drugs have gametocytocidal effects. Several different classes of anti-malarials were used and are reported. One of these drugs was once a common anti-malarial drug-methylene blue. We are also able to report on a new proposed mode of action for this drug. The treated gametocytes are able to be membrane fed to *Anopheles stephensi* mosquitoes to determine if they are still infective after drug treatment. These results will be important as we continue to move towards the eradication of malaria.

Biography

Christopher Lloyd Peaty completed his PhD in 2011 at the Queensland University in Australia. He is now working as a Scientific Officer for the Australian Army Malaria Institute. His work includes determining the causes of artemisinin induced dormancy, looking at signalling pathways behind the switch to gametogenesis in *Plasmodium falciparum* and also looking at causes for the loss of HRPII in malaria species globally. He has 13 publications with over 370 citations and his H index is 11. He has presented at several major international conferences including ASTMH and Woods Hole MPM. He spent 4 years serving on the Executive Board of the Australian Society for Parasitology.

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