

## **The impact of mosquito resources on malaria parasite development and consequences for transmission**

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Malaria parasites (*Plasmodium* spp.) have a complex lifecycle, where transmission between human hosts relies on passage through female *Anopheles* mosquitoes. Parasites rely on resources from their mosquito host to develop, and there is evidence that an additional blood meal can speed up growth. However, how parasites respond to poorly-resourced mosquitoes is unknown. Using *P. chabaudi*-infected mosquitoes we test how an additional blood meal and varying fructose only diets influence oocyst growth and sporozoite burden over the course of parasite development. Our data suggest that well-resourced mosquitoes allow parasites to grow quicker and produce more sporozoites, and poorly-resourced mosquitoes cause constraints on oocyst productivity. As mosquitoes with higher sporozoite burdens are more likely to initiate infection in a vertebrate host, understanding the factors which can benefit or constrain parasite development is highly important for understanding transmission potential. Furthermore, as vector control tools are altering mosquito genotypes and phenotypes, including resource use, understanding how mosquito resources shape transmission is particularly timely.