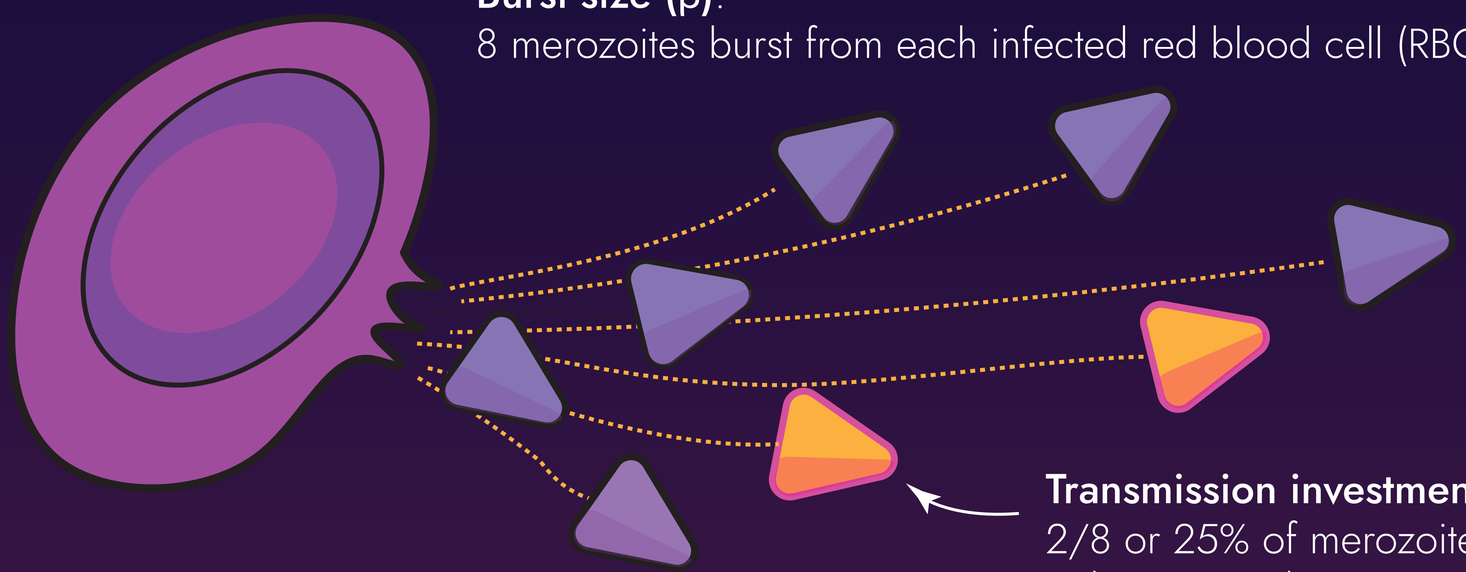
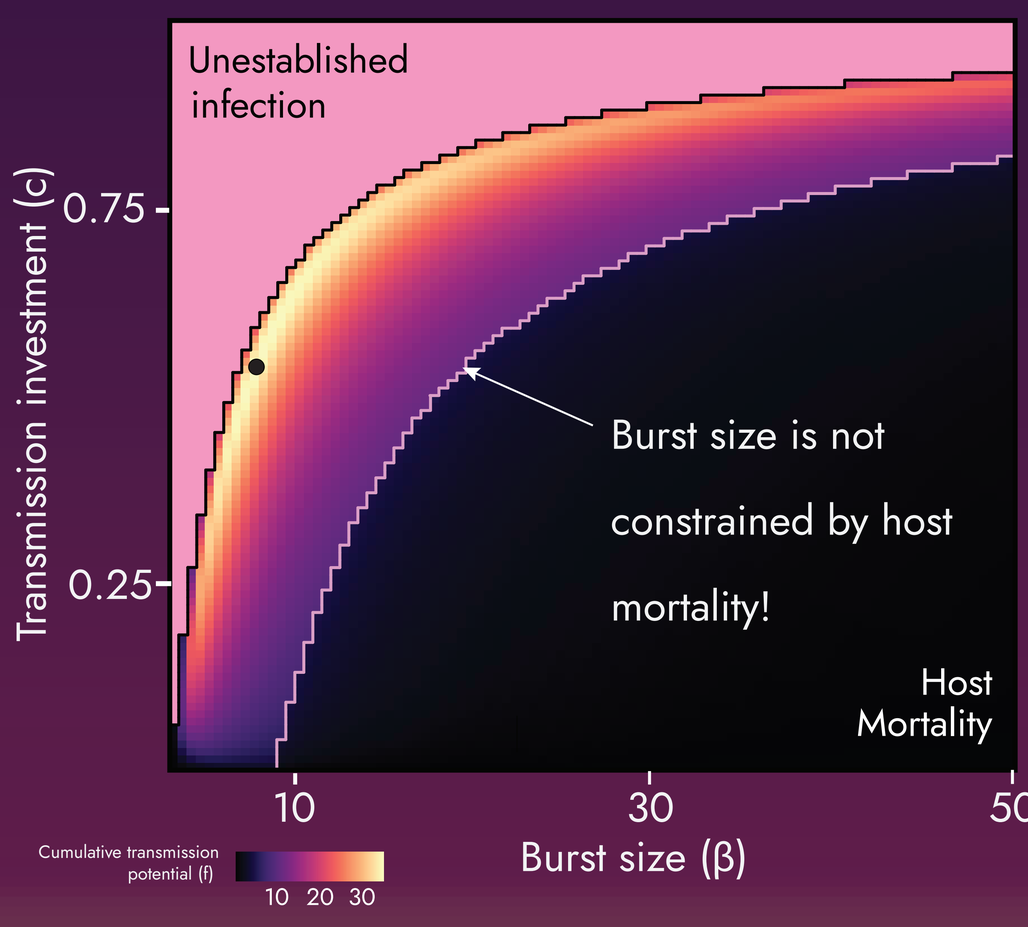
Resource availability constrains the proliferation rate of malaria parasites

Damie Pak, Tsukushi Kamiya, and Megan Greischar

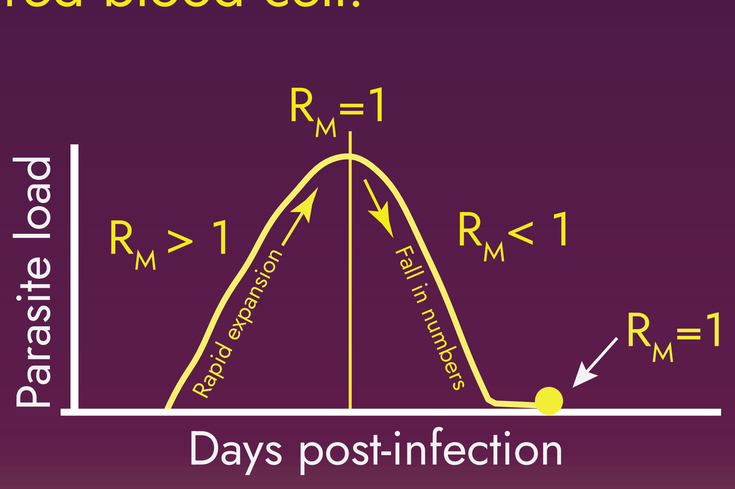


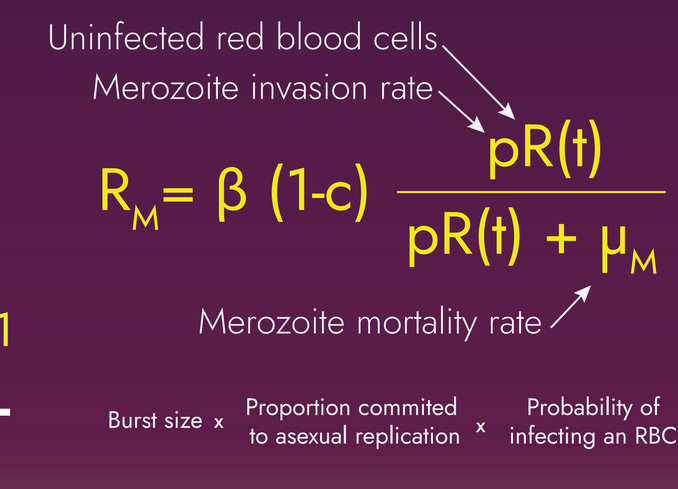
To maximize transmission, how should malaria parasites optimize **burst size** and transmission investment?



Simulating within-host infections, we find the **optimal strategy is not maximizing the burst size.**

To explore why, we quantify the effective merozoite number, $\mathbf{R_M}$, which shows how many merozoites committed to asexual replication will infect a red blood cell.





The optimal burst size does not involve producing the most gametocytes nor prolonging the length of the first wave.