The Pathology of Polyparasitism: A three year longitudinal study of parasitic coinfection in young children in Malawi

Human parasitic infections are widespread, especially in in tropical and subtropical climates. Where multiple parasite species share risk factors for transmission, such as unsafe water infrastructure, these parasites may be co-endemic within the same region. For communities living in these high risk areas, polyparasitism is common, often outnumbering single infections. Despite this, the impact of parasitic coinfection remains relatively understudied. We investigated *Schistosoma, Plasmodium* and *Giardia* in children living along the southern shoreline of Lake Malawi. While these three parasites' overlapping distributions and shared environmental risk factors may lead to the assumption that any relationship between them will be positive, within-host interactions can lead to unexpected outcomes in coinfection. Using a combination of field diagnostic techniques alongside real-time PCR for relative quantification of infection intensity, we explore relationships between coinfecting parasites, the impact of polyparasitism on host health and the influence of deworming on malaria vaccination, demonstrating that even a treated parasite can have lasting effects on the host.