



THE UNIVERSITY *of* EDINBURGH

News Release

Issued: Thursday 8 March 2018

Meal times may be key to managing malaria, parasite study shows

Malaria infections might be brought under control by managing the eating habits of infected people or animals, according to a new study.

Meal times are an important driver in enabling the disease to thrive, the findings suggest.

Tests in infected mice found that malaria parasites in the blood timed their daily multiplication rhythms to match when the animals were fed. When the mice's mealtime changed, the parasites altered the timing of when they invaded red blood cells.

The parasites' rhythms were linked to daily changes of blood sugar levels in the mice, the study showed.

Interfering with the biological pathways that link eating to parasite rhythms – perhaps through diet, or drugs that manipulate the process – could reduce both the severity and spread of malaria infection, researchers suggest.

An international team led by the University of Edinburgh studied the timing of parasite rhythms – in multiplication and red blood cell invasion – in groups of malaria-infected mice.

Changing the feeding times of the animals, by allowing them to eat during the day instead of at night, altered the timing of parasite multiplication from night to day, in line with the mealtime of the mice.

Scientists now plan to examine how differences in timing impact on parasites and the biological mechanisms controlling their rhythms, to better understand how to tackle infection.

The study, in collaboration with the University of Surrey, Stanford University and King Abdullah University of Science and Technology in Saudi Arabia, was published in *PLoS Pathogens* and supported by the Royal Society and Wellcome.

Dr Kimberley Prior, of the University of Edinburgh's School of Biological Sciences, who led the study, said: "We were surprised by how strongly malaria infection responded to changes in the eating times of the mice they were infecting. This offers a new avenue for research. If we can disrupt the link, it could reduce both the impact and the spread of malaria infection."

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