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Malaria parasites fine-tune offspring's gender: study

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By Michael Kahn

LONDON (Reuters) - Malaria parasites fine-tune the number of male and female offspring they produce to maximize the odds of infecting another host, a finding that could help fight the deadly disease, British researchers said on Wednesday.

The parasites use a neat evolutionary trick that allows them to adjust reproduction of sons and daughters to best transmit genes to the next generation, the researchers reported in the journal Nature.

"The basic point is we need to know our enemy somewhat better," said Sarah Reece, an evolutionary biologist at the University of Edinburgh, who led the study. "The mating biology of the parasite has been pretty neglected."

Malaria, caused by a parasite transmitted by mosquitoes, infects between 300 million and 500 million people each year, mainly in Africa. The disease kills about 1 million people each year, including a child every 30 seconds.

It has also become resistant to some drugs and work on a vaccine has been slow. One effective treatment is Novartis AG's Coartem, currently the gold standard in malaria care.

The parasite that causes malaria reproduces asexually within a host but only males and females can survive inside a mosquito. So the parasite must ensure it produces the right number of each sex to boost the chances of passing on its genes through mosquitoes, Reece said.

"If they can't infect mosquitoes, they can't spread the disease," Reece said in a telephone interview.

The researchers looked at the rodent-infecting malaria parasite called Plasmodium chaubi, which Reece said was likely to act in the same way as human parasites.

To determine mating patterns, the researchers adjusted whether they infected mice in a lab with genetically identical or unrelated parasites.

They found that in both cases parasites were able to favor one sex over another depending on the environment, to enhance their chances of survival, Reece added.

"We don't know exactly what information they are using but it shows they can monitor the environment they are living in and respond to this information to maximize their reproductive success," she said.

Knowing more about how the parasite reproduces may offer new ways to target malaria by preventing them from infecting mosquitoes, and consequently humans, Reece said.

It also means potential drugs or vaccines to do this might need to be more sophisticated to deal with the evolutionary maneuver that allows the parasites to spread, she added.

(Reporting by Michael Kahn; Editing by Maggie Fox and Catherine Evans)

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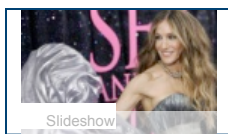
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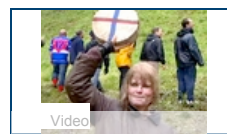
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