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How parasites react to the mouse immune system may help to shape their control

How parasites use different life-history strategies to beat our immune systems may also provide insight into the control of diseases, such as elephantiasis and river blindness, which afflict some of the world's poorest communities in tropical South-East Asia, Africa and Central America. The research is due to be published next week in the online, open-access journal *PLoS Biology*.

The study, led by Dr Simon Babayan of the University of Edinburgh, showed using a mouse model of parasite infection (for diseases such as elephantiasis) that when the parasitic worms enter the body, they are potentially able to adjust their survival strategy relative to the strength of the host's immune system. When the immune reaction is strong, the parasites accelerate their growth rate to produce offspring earlier and in greater numbers, ensuring the continued spread of the disease. The authors note that additional work will be required to confirm whether such a response is adaptive and to tease out the mechanisms involved.

Elephantiasis, which causes swelling of the legs, and river blindness, are both caused by parasitic worms spread by black flies and mosquitoes. No vaccines for these conditions currently exist. Those affected can be left disfigured, vulnerable to illness, and unable to work, thus putting economic strain on affected societies.

The Edinburgh team will contribute their latest findings into an international project to create a vaccine that, when complimented by drug treatments, could help to eliminate these diseases.

Dr Babayan said: "Most vaccines mimic the natural immunity of people, but our research suggests this approach could be counterproductive for some parasitic diseases. We hope this latest finding will help inform the design of future vaccines against these infections. Clinical trials analyse the impact of potential vaccines on host health; we suggest they should also focus on their impact on parasite life history."

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