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HIGHLIGHTS

Malaria parasites adjust sex ratio for kin

Malaria and related single-celled parasites — collectively known as apicomplexans — are able to adjust their sex ratio in response to environmental conditions and the level of inbreeding they encounter, Scottish researchers have found. Their work confirms the assumptions and predictions of sex allocation theory as formulated by evolutionary biologist William Hamilton. The finding is important to the development and deployment of drugs and vaccines against malaria and other serious diseases, such as toxoplasmosis and coccidiosis.

Apicomplexans have a complicated life cycle involving reproduction in two host animals and both asexually- and sexually-reproducing forms. In a recent paper in *Nature*¹, the team, including A-IMBN member Damien Drew, now at the Walter and Eliza Hall Institute in Australia, describe how they used two engineered lines of rodent malaria parasites, one of which produced only viable male gametes and the other only viable female gametes. The two could be mixed in varying proportions to manipulate the sex ratio. The researchers also employed mixtures of six different parasite genotypes to mimic inbreeding in their experimental work. Not only did they confirm that the greater the chances of inbreeding, the more the sex ratio biases towards females, but also that the sex ratio is affected by competition, the host's immune response, and anemia — as the parasites reproduce in red blood cells.

Reference

1.Reece, S.E.,^{1,2} Drew, D.R.^{2,3} & Gardner, A.¹ Sex ratio adjustment and kin discrimination in malaria parasites. *Nature* **453**, 609–614 (2008).| [article](#) |

Author affiliation

¹Institute of Evolutionary Biology, Ashworth Laboratories, School of Biological Science, University of Edinburgh, West Mains Road, Edinburgh EH9 3JT, UK

²Institute of Immunology and Infection Research, Ashworth Laboratories, School of Biological Science, University of Edinburgh, West Mains Road, Edinburgh EH9 3JT, UK

³The Walter and Eliza Hall Institute of Medical Research Biotechnology Centre, Research Avenue,
Bundoora, Victoria 3086, Australia

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