

Paper: Immunity Promotes Virulence Evolution in a Malaria Model

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Immunity Promotes Virulence Evolution in a Malaria Model

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Evolutionary models predict that host immunity will shape the evolution of parasite virulence. While some assumptions of these models have been tested, the actual evolutionary outcome of immune selection on virulence has not. Using the mouse malaria model, *Plasmodium chabaudi*, we experimentally tested whether immune pressure promotes the evolution of more virulent pathogens by evolving parasite lines in immunized and nonimmunized ("naïve") mice using serial passage. We found that parasite lines evolved in immunized mice became more virulent to both naïve and immune mice than lines evolved in naïve mice. When these evolved lines were transmitted through mosquitoes, there was a general reduction in virulence across all lines. However, the immune-selected lines remained more virulent to naïve mice than the naïve-selected lines, though not to immunized mice. Thus, immune selection accelerated the rate of virulence evolution, rendering parasites more dangerous to naïve hosts. These results argue for further consideration of the evolutionary consequences for pathogen virulence of vaccination.

Full Text at

<http://www.plosbiology.org/plosonline/?request=get-document&doi=10.1371%2Fjournal.pbio.0020230>

Comment:

The development of natural immunity may lead to extra selection pressure against those individuals not carrying or inheriting that immunity, thus accelerating evolution of immunity. If phenotypic traits accompanied that immunity, such as those animals first having the immunity also having some phenotypic variation, then the evolution of that variation will also be accelerated – just a thought :)

Posted by

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