



Pork Information Gateway



Research Project: Selection at a single locus leads to widespread expansion of *Toxoplasma gondii* lineages that are virulent in mice.

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Summary:

We elucidated the evolutionary history and functional consequences of diversification in gene of the zoonotic parasite *Toxoplasma gondii* called ROP18, a serine-threonine kinase believed to trigger changes in host cells upon secretion from the parasite. We identified three, exceptionally distinct versions of this gene which induce very different disease in mice. Our data indicate that evolutionary loss of an upstream regulatory element increased ROP18 expression, exposing it to newfound diversifying selection, and greatly enhanced virulence in mice. Our findings demonstrate that sweeping changes in population structure can result from alterations in a single gene. This work was published in *The Public Library of Science (PLoS Genetics)*:

<http://www.plosgenetics.org/article/info:doi/10.1371/journal.pgen.1000404>