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# Genomic responses in mouse models poorly mimic human inflammatory diseases

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## Abstract

A cornerstone of modern biomedical research is the use of mouse models to explore basic pathophysiological mechanisms, evaluate new therapeutic approaches, and make go or no-go decisions to carry new drug candidates forward into clinical trials. Systematic studies evaluating how well murine models mimic human inflammatory diseases are nonexistent. Here, we show that, although acute inflammatory stresses from different etiologies result in highly similar genomic responses in humans, the responses in corresponding mouse models correlate poorly with the human conditions and also, one another. Among genes changed significantly in humans, the murine orthologs are close to random in matching their human counterparts (e.g.,  $R^2$  between 0.0 and 0.1). In addition to improvements in the current animal model systems, our study supports higher priority for translational medical research to focus on the more complex human conditions rather than relying on mouse models to study human inflammatory diseases.

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## Footnotes

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<sup>4</sup>A complete list of the Inflammation and Host Response to Injury, Large Scale Collaborative Research Program can be found in *SI Appendix* (/lookup/suppl/doi:10.1073/pnas.1222878110/-/DCSupplemental/sapp.pdf).

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