

Abstract Submitted  
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**A Physical Theory of the Competition that Allows HIV to Escape from the Immune System** MICHAEL DEEM, Rice University — Competition within the immune system may degrade immune control of viral infections. We formalize the evolution that occurs in both HIV-1 and the immune system quasispecies [1]. Inclusion of competition in the immune system leads to a novel balance between the immune response and HIV-1, in which the eventual outcome is HIV-1 escape rather than control. The analytical model reproduces the three stages of HIV-1 infection. We propose a vaccine regimen that may be able to reduce competition between T cells, potentially eliminating the third stage of HIV-1. 1) G. Wang and M. W. Deem, Phys. Rev. Lett. 97 (2006) 188106.

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