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ABSTRACT | Sebastien Ballesteros

Title

Immune boosting and influenza A phylodynamics

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Abstract

Three models have been proposed to explain the distinctive phylodynamic pattern observed in human A/H3N2 viruses: (i) that there is short-lived cross-immunity among viral strains, (ii) that the HA evolves in a punctuated manner among antigenic types that are linked by a network of neutrally evolving sites, and (iii) that the virus continually reuses a limited number of antigenic combinations. We present a general framework to determine which combination of these models best explains influenza phylodynamics. We reveal a key role of immune boosting, a process where exposed individuals that do not contract infection nevertheless gain additional cross-protection.