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Concomitant loss of neutralizing B-cell epitopes and CD4 T-cell epitopes in hemagglutinin of drifted *Influenza virus*

Influenza virus infections lead to significant morbidity, mortality and economic burden that warrant yearly vaccination. Vaccinations and natural infections confer protection by inducing neutralizing antibodies directed predominantly against viral hemagglutinin. With time, this antibody-mediated selection pressure leads to the emergence and circulation of drifted viruses, which present mutated neutralizing B cell epitopes in hemagglutinin that are no longer recognized by neutralizing antibodies directed against the parent virus. While the effect of antigenic drift on loss of B cell epitopes is known, relatively little is known about how this affects T cell epitopes in hemagglutinin. Here, we explored the location and conservation vs. alteration of CD4 T cell epitopes in hemagglutinin of parental A/PR/8/34 and drifted variant, A/FM/1/47 influenza viruses in Balb/c mice. We show that B and CD4 T cell epitopes overlap and loss of B cell epitopes also leads to a concomitant loss of CD4 T cell epitopes in the drifted virus. Of the two CD8 T cell epitopes, one had one amino acid substitution but it did not affect recognition by CD8 T cell epitopes in *Influenza virus* hemagglutinin.

Biography

Joshy Jacob is an Associate Professor in the Department of Microbiology and Immunology at Emory University. He received his PhD in Immunology from the University of Maryland School of Medicine at Baltimore and completed his Post-doctoral training at the Rockefeller University and the Massachusetts Institute of Technology. His research focuses on studying (a) fundamentals of B cell memory and (b) host responses to drifted influenza vaccines.

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