In the news

UNIVERSAL FLU VACCINE?

Influenza virus is a difficult vaccine target, as it continually alters its surface proteins and thereby evades recognition by antibodies; however, a recent study in *Nature Medicine* reports that targeting conserved core proteins using virus-specific $CD8^+$ T cells could provide a 'blueprint' for a universal flu vaccine (*BBC News*, 22 Sep 2013).

A team at Imperial College London, UK, carried out a prospective cohort study that began during the 2009 H1N1 swine flu pandemic, and involved 342 volunteers who lacked H1N1-neutralizing antibodies. The researchers monitored the levels of pre-existing cross-reactive $CD8^+$ T cells in the volunteers and correlated this with illness severity. They found that individuals who had high levels of virus-specific $CD8^+$ T cells developed less severe illness, with a specific subset of effector memory $CD8^+$ T cells having the strongest protective effect. This population of cells responded specifically to the immunodominant PB1, NP and M1 core proteins, which are conserved across different influenza virus subtypes (*Nature Med.*, 22 Sep 2013).

The senior author of the study, Professor Ajit Lalvani said, "now that we know these T cells may protect, we can design a vaccine to prevent people getting symptoms and transmitting infection to others" (*Huffington Post*, 23 Sep 2013). He admits, however, that it is "generally harder" to develop a T cell vaccine than one designed to stimulate an antibody response (*BBC News*, 22 Sep 2013). Professor John Oxford of Queen Mary, University of London, UK, said that the findings are "not going to solve all the problems of influenza", and cautioned that "it's going to be a long journey from this sort of paper to translating it into a vaccine that works" (*BBC News*, 22 Sep 2013). Considering that influenza is estimated to kill between 250,000 and 500,000 people annually worldwide (*WHO*), a vaccine that targets all strains is a high research priority.

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