

Centenario de la Gripe Española de 1918. La peor pandemia en la historia contemporánea mundial: lecciones para el futuro

Centenary of the 1918 Spanish Influenza, the Worst Pandemic in the Recent History of the World: Lessons for the future

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ABSTRACT

Steps towards a universal influenza virus vaccine

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Despite FDA-approved vaccines and antivirals, seasonal and pandemic influenza remain serious threats associated with substantial morbidity and mortality. While annual seasonal influenza virus vaccination is frequently effective – albeit underutilized in most countries – a safe universal influenza virus vaccine providing broad and long-lasting immunity would represent a major breakthrough. We have developed vaccine constructs which express hemagglutinins resulting in the redirection of the immune response away from the immunodominant (variable) epitopes of the hemagglutinin towards conserved domains of the hemagglutinin and the highly conserved neuraminidase. Such vaccine constructs work well in animal challenge models and are currently tested in clinical trials in humans. The mechanism by which these novel vaccines mediate protection is via antibodies which do not rely on hemagglutination inhibitory (HI) activity but rather on ADCC (antibody-dependent cell-mediated cytotoxicity) effects, activation of complement and/or inhibition of virus replication through directly binding to viral proteins. It is hoped that the universal influenza virus vaccine based on novel hemagglutinin constructs will provide long-lasting protection against all seasonal and pandemic influenza virus strains in the future.