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## Isolation of the monoclonal antibody with high antibody-dependent cell-mediated cytotoxicity from the hemagglutinin head-region epitope of pandemic H1N1 influenza virus

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Engaging the antibody-dependent cell-mediated cytotoxicity (ADCC) for killing of virus-infected cells and secretion of antiviral cytokines and chemokines was incorporated as one of the important feature in the design of universal influenza vaccines. In past decades, investigation of the ADCC epitopes on the highly immunogenic influenza hemagglutinin (HA) head region has been largely absent. In this study, we determined the ADCC and antiviral activities of two putative ADCC epitopes (E1 and E2) on the HA-head of a pandemic H1N1 influenza virus in vitro and in a lethal mouse model. Our data demonstrated that sera from the E1-vaccinated mice could induce high ADCC activities. While induction of ADCC response modestly decreased viral load in the lungs of H<sub>1</sub>N<sub>1</sub>-infected mice, the elevated ADCC significantly increased mouse alveolar damage and mortality than that of the PBS-vaccinated group. This phenotype was potentially due to an exaggerated inflammatory cell infiltration triggered by ADCC, as an up-regulated release of cytotoxic granules were observed in the lung tissue of E1-vaccinated mice after H1N1 influenza virus challenge. Our data suggested that ADCC elicited by certain domains of HA head-region might have a detrimental rather than protective effect during influenza virus infection. Meanwhile, we have successfully cloned the E1-specific monoclonal antibody and determined the human germline V(D)J combinations on this antibody. The resultant monoclonal antibodies expressed could be visualized on SDS-PAGE and detected in ELISA. With a series of optimization, the platform for cloning ADCC antibodies has been established.

### Biography

Zi-Wei Ye has her expertise in Cell Biology and Biotechnology, completed her PhD on a University Post-graduate Fellowship at the University of Hong Kong and received Post-doctoral training in HKU Li Ka Shing Faculty of Medicine.

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