# Heterologous and Heterosubtypic Neuraminidase-inhibiting Antibodies Elicited by Recombinant Protein Immunization

Suh-Chin Wu[1*], Wen-Chun Liu[1], Chia-Ying Lin[1], Yung-Ta Tsou[1], Jia-Tsrong Jan[2]

[1.] Institute of Biotechnology, National Tsing Hua University, [2.] Genomics Research Center, Academia Sinica

**Background/Objective**

Neuraminidase (NA) is an influenza virus enzymatic protein that cleaves sialic acid linkages on infected cell surfaces, thus facilitating viral release and contributing to viral transmission and mucus infection. In currently available inactivated or live-attenuated influenza vaccines based on the antigenic content of hemagglutinin proteins, vaccine efficacy can be partly contributed through NA-elicited immune responses.

**Method**

For this study we used a baculovirus-insect cell expression system to construct and purify H5N1-rNA (A/Vietnam/1203/2004) and pH1N1-rNA (A/Texas/05/2009) proteins.

**Result**

BALB/c mice immunized with these proteins had high titers of NA-specific IgG and NA-inhibiting (NI) antibodies against H5N1, pH1N1, H3N2 and H7N9 viruses. H5N1-rNA immunization resulted in higher quantities of NA-specific antibody-secreting B cells in spleen against H5N1 and heterologous pH1N1 viruses. H5N1-rNA and pH1N1-rNA immunizations both provided complete protection against homologous virus challenges, with H5N1-rNA immunization providing better protection against pH1N1 virus challenges.

**Conclusion**

It is our hope that these findings provide useful information for the development of a NA-based universal influenza vaccine.