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Licensable Technologies

# Novel Antibody Therapy for Influenza

**Applications:**

- Potential broad therapeutic for Influenza

**Benefits:**

- Higher specificity and broader efficacy than currently available influenza therapeutics

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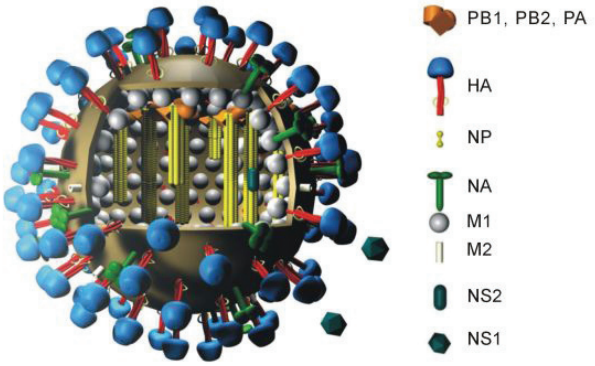


*Image source: virusomics.org*

**Summary:**
Influenza is a debilitating seasonal illness that has significant impacts on global health every year. According to the World Health Organization, flu epidemics cost anywhere from $71 – 167 billion dollars per year in the US alone. In terms of people affected, these annual epidemics are thought to result in between three and five million cases of severe illness and between 250,000 and 500,000 deaths around the world every year.

Currently in the US, only two FDA approved therapies exist for influenza, Zanamivir (Relenza®) and Oseltamivir (Tamiflu®). Unfortunately, Zanamivir is not recommended for use in individuals with respiratory problems or small children under the age of five. Both therapeutics have side effects including edema (swelling), nausea, among others.

M2 is one of the most conserved influenza proteins, and has been widely prospected as a potential universal vaccine target, with protection predominantly mediated by antibodies. The M2 gene encodes for a small ectodomain known as M2e (Palese and Shaw, 2006), making it an ideal target for therapeutic intervention. Multiple strategies have been employed to develop antibodies against this target, but have been difficult to prove useful in protecting against a viral challenge. Unfortunately, none of the previous studies provide documented protection against M2e because sequence differences exist between the immunizing antigen and infection strain reducing their use as broadly-reactive against multiple flu strains. However, recently, two murine-based antibodies, 14C2 and M2-80, have shown protection against infection in mice (Zharikova et al., 2005).

Los Alamos National Laboratory (LANL) researchers, led by Dr. Andrew Bradbury, have discovered a highly specific, tightly binding antibody to the M2 influenza protein. Using information about the murine 14C2 antibody, the researchers created a humanized, minibody that recognizes M2e as well as the murine 14C2 mAb.

**Development Stage:**
A humanized 14C2 scFv converted into minibody format. Initial in vitro data showing plaque inhibition has been collected.

**Intellectual Property Status:**
Non-provisional patent application filed 11/20/2009.

**Licensing Status:**
Los Alamos is seeking commercial partners to assist with commercialization.

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