

# Immunobiology of Influenza Virus Infection: Approaches for an Emerging Zoonotic Disease

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## Abstract Submission Form

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- We suggest using *Helvetica* font for your abstract, minimum 8 point font. Do not use special characters. Type out your Greek and Scientific symbols (alpha, beta, etc.) to ensure correct syntax when the Abstract Books are printed.
- Abstract submitter must underline their name in the list of authors.
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- Provide any grant acknowledgments for your research (i.e., NIH-AI-13028) at the end of your abstract.
- The maximum poster size is 36''x 48''
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## Sample Abstract Title

Jane Doe<sup>1</sup>, John Smith<sup>2</sup>, Uga Bull Dog<sup>2</sup>.

<sup>1</sup>Department of Infectious Diseases, University of Georgia, Athens, GA, 30602. <sup>2</sup> Department of Sports Medicine, University of Georgia, Athens, GA, 30602

Influenza virus infection is responsible for thousands of mortalities annually. While vaccines are available, they are strain-specific, and constant variation within the target antigens requires formulation of new vaccines annually and leaves the public susceptible to unexpected, potentially pandemic strains. The influenza matrix protein, M2, found on the surface of both the virion and infected cells, is highly conserved across influenza A subtypes. Immunization with a peptide comprising the ectodomain of M2 (M2e) has been shown to protect against influenza challenge, although loss of reactivity due to multiple mismatches found in avian viruses is a concern. Moreover, escape mutants can develop in the presence of M2e-specific antibody.

Immunization with plasmid DNA expressing a full-length M2 protein (from an H1N1 virus, M2-DNA) has advantages over peptide immunization strategies. M2-DNA immunization expresses the antigen intracellularly, a manner more similar to infection, potentially provides additional antibody epitopes, both linear and conformational, and has the potential to induce M2-specific cellular immune responses. Using a mouse model of influenza infection, we show that M2-DNA immunization induces M2-specific serum antibody responses and protects against lethal influenza virus challenge. When M2-DNA priming is followed by a boost with recombinant adenovirus expressing the same M2 gene (M2-Ad), the boost induces enhanced serum antibody titers that cross-react with M2 peptides from both human and avian influenza isolates. Moreover, M2-DNA immunization followed by M2-Ad boost confers broad protection against lethal influenza A challenge, including potentially pandemic H5N1 strains, indicating this could be a component of a universal influenza A vaccine.

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