



## Broadly protective influenza B virus vaccines

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### The Invention

UW-Madison researchers have developed a series of mutant influenza B viruses that incorporate mutations in the HA1 protein that cause the virus to react with sera generated via exposure to the opposite lineage of B viruses, in addition to reacting to sera generated via exposure to the parental lineage of viruses. As the Yamagata and Victoria lineages are antigenically distinct, these mutant viruses are antigenically 'between' the two lineages.

Using a novel approach, the inventors have identified 36 amino acid differences between the antigenically distinct HA1 proteins from the Victoria and Yamagata lineages, and they designed a library in which the amino acid residues that occupy each of those locations was randomly selected from the two choices found at that residue. They generated a library in a Yamagata lineage background and repeated it to generate another library in a Victoria lineage background. In this way, mutants with any number of substitutions (up to 36) were created, and each large library was screened for cross-reactivity with both Yamagata-specific and Victoria-specific sera. The inventors identified a few dozen mutants with substantially higher cross-reactivity than seen with the parent virus. The inventors are presently using some of the best candidates to induce an immune reaction in ferrets to generate anti-sera for each of those mutants, which can then be tested for reactivity against circulating Victoria- and Yamagata- viruses, to determine whether, as the present data suggest, the mutant 'in between' viruses will induce an immune response that effectively neutralizes challenge viruses from both lineages. The use of such mutants as vaccine viruses may elicit antibodies that provide protection against influenza B viruses from both lineages, and thereby obviate the need for flu vaccines to include two separate B viruses.

#### Tech Fields

- [Therapeutics & Vaccines : Vaccines](#)

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