Hearing of the House Committee on Energy and Commerce, Subcommittee on Oversight and Investigations

The Role of the National Institute of Allergy and Infectious Diseases in Research Addressing Seasonal and Pandemic Influenza

Anthony S. Fauci, M.D.
Director
National Institute of Allergy and Infectious Diseases
National Institutes of Health
February 3, 2015

Classic Platforms for Seasonal and Pandemic Influenza Vaccines

- Inactivated influenza virus grown in eggs or cells
- Live, attenuated influenza virus grown in eggs or cells

New Platforms for Seasonal and Pandemic Influenza Vaccines

- Recombinant subunit
- Synthetic peptide
- Microbial vector
- Nanoparticle-based
- Virus-like particles (VLPs)
- DNA-based
- Novel delivery systems (e.g., microneedles)

Induction of Unnatural Immunity: Prospects for a Broadly Protective Universal Influenza Vaccine

GJ Nabel and AS Fauci

Influenza A Hemagglutinin (HA)
**Generating Broadly Neutralizing Antibodies: Targeting the Stem**

- Most antibodies bind to epitopes of highly variable head region.
- Antibodies that neutralize multiple strains bind to a highly conserved area in the stem region.

**Source:** Laurice NE and Wilson D. Antiviral Research 80(2), 2013.

---

**NIAID-Supported Universal Influenza Vaccine Candidates**

- DNA “Prime,” Seasonal Influenza Vaccine “Boost”
- HA Stem Vaccines
- HA-Ferritin Nanoparticle Vaccines
- Computationally Optimized Broadly Reactive Antigen (COBRA) Vaccines