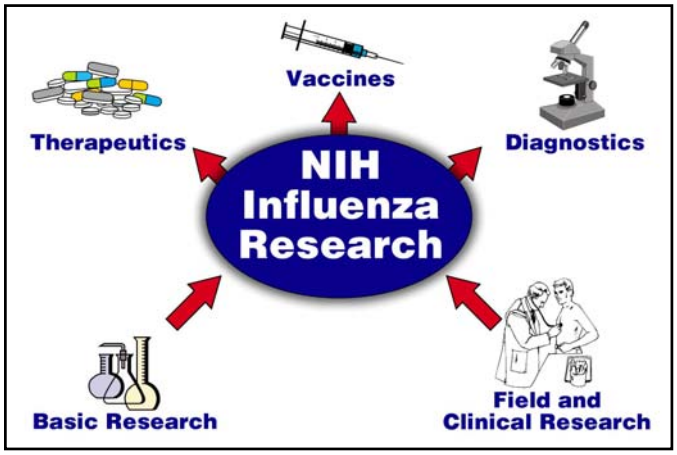
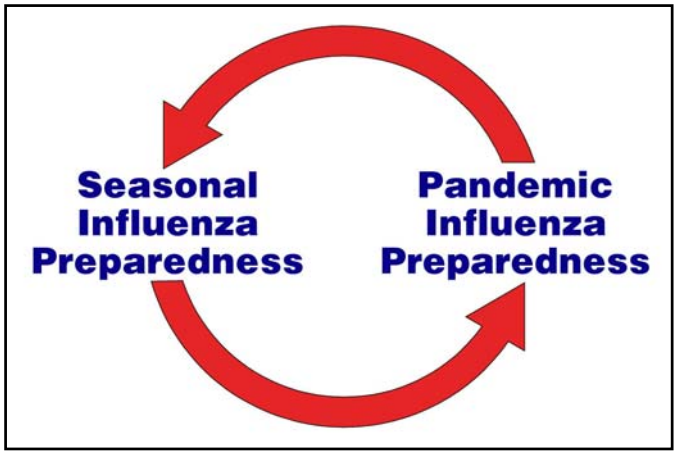




Pandemic Influenza Vaccine

- Pre-pandemic
- Pandemic

Pre-Pandemic Evaluation of Sanofi H5N1 Vaccine

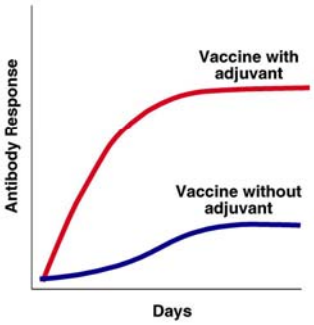
- Evaluation in healthy young adults, the elderly and children.
- In young adults -- well tolerated and induced an immune response predictive of protection.
- However, required dose was 90 ug x2 and good responses were seen in only ~50% of volunteers.
- Results in young adults published in *The New England Journal of Medicine*, March 30, 2006.

Major Challenges to Influenza Vaccine Development

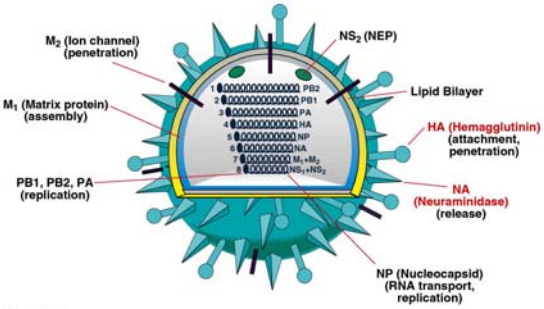
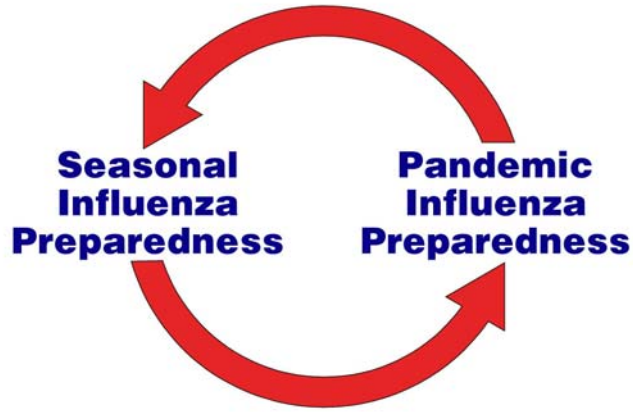
- Accelerate development of cell culture-based vaccine technology
- Develop novel vaccine approaches
- Evaluate dose-sparing strategies, especially adjuvants
- Broaden the use of live, attenuated vaccine approaches

Vaccine Adjuvants

- Reduce amount of antigen needed
- Promote earlier, stronger, more durable immune responses
- May increase cross-protective immune response



Influenza Virus Proteins and RNAs: Targets for a "Universal Vaccine"



Source: Subbarao/Murphy