U.S. Pork Producers Influenza Priorities

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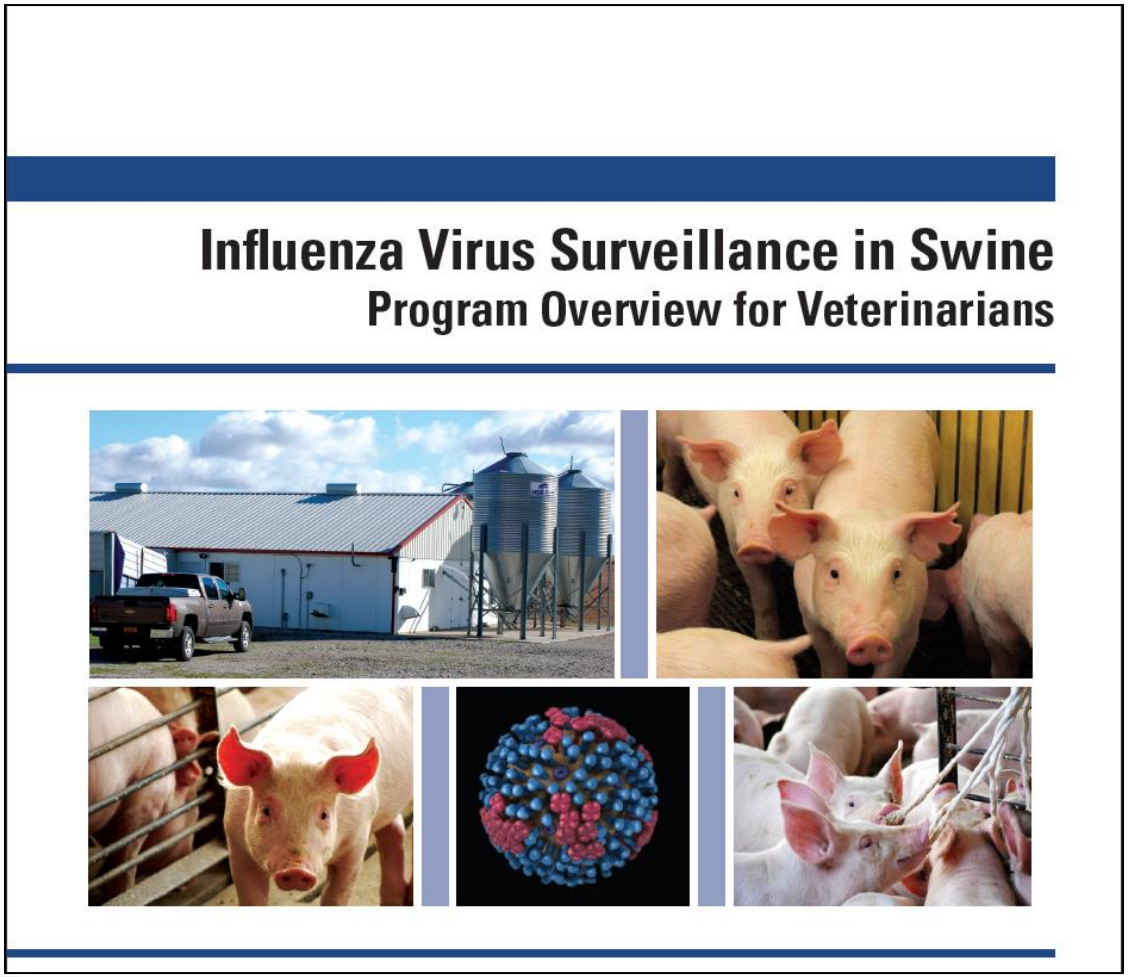
pork checkoff

Swine Industry Influenza Priorities

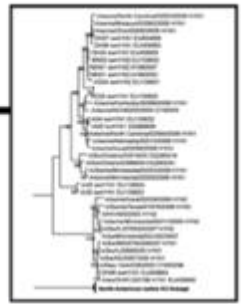
- Key Gaps/Needs:
  - Global monitoring and reporting of influenza isolates
  - Genetic and antigenic analysis of influenza isolates
  - Development of new vaccine technologies
  - Better understanding of zoonotic disease determinants and transmission
  - Continued communication between animal health and public health communities

Influenza A Virus in Swine (IAV-S) Surveillance Plan



From Surveillance to Application

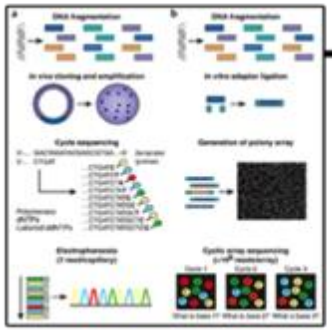
Genetic Analysis



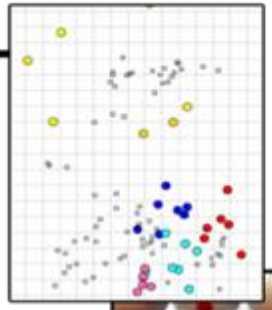
- Monitor genetic evolution and ecology

Sensitize Animal Health & Public Health

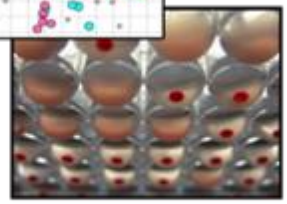
Sequencing



Antigenic Analysis



Swine Studies



- Diagnostic reagents
- Diagnostic assays
- Vaccines

Courtesy of Amy Vincent, USDA

Research Priorities-Swine Health

- Elimination of the virus from endemically affected herds (Disease characteristics)
- Genetic and antigenic analysis (Disease characteristics)
  - Rate of reassortment among the internal genes of IAV-S isolates
  - Rate of antigenic drift and shift within a closed herd

Research Priorities-Swine Health

- Development of new or novel vaccine technologies (Disease characteristics)
  - Decrease viral shedding and transmission and provide broad protection against multiple strains
  - Platforms for rapid recognition of viral changes and incorporation into vaccines
  - Rapid approval and deployment

Research Priorities – Public Health

- Interspecies transfer of influenza virus (Human animal interface)
  - Introduction of new genes into a IAV-S positive herd from workers infected with endemic human influenza A virus
  - Assessment of current interventions or development of new interventions for mitigation of interspecies transfer of influenza virus in pork production facilities

Research Priorities – Public Health

- Determinants of zoonotic transmission (Human animal interface)

Research Priorities – Public Health

- Characterize influenza dynamics in exhibitors and their pigs through the show pig/exhibitor lifecycle (Human animal interface)

  - Emphasis on identifying epidemiologic links to increased or decreased risk of infection for humans or pigs

Other Global Priorities

- Enhanced monitoring and reporting of influenza isolates (real-time data for epi analysis)
- Standardized naming of influenza viruses (e.g. Influenza A H3N2 variant virus)
- Strategies to decrease viral antigenic shift in countries with multiple circulating strains

Summary

- Key Needs:
  - Global monitoring and reporting of influenza isolates
  - Genetic and antigenic analysis of influenza isolates
  - Development of new vaccine technologies
  - Better understanding of zoonotic disease determinants and transmission
  - Continued communication between animal health and public health communities