

PROGRAM ACTIVITY REPORT (PAR)



Influenza A viral shedding and antibody response in feral swine

In domestic animals, clinical signs of disease initiate diagnostic procedures that hopefully result in successful intervention strategies to limit pathogen spread. Clinical signs are often correlated with pathogen shedding and timely sampling allows for direct isolation of the disease agent and improved management outcomes.

Disease surveillance in wildlife is complicated by the fact that direct observation (and sampling) of clinically suspect individuals is uncommon.

The result is that most wildlife surveillance programs rely heavily on antibody detection in order to ascertain exposure, presence, prevalence, and spatial distribution of infectious disease. Direct pathogen detection and /or isolation are rare in wildlife, because the chance of capturing and sampling individuals that are currently infectious or are actively shedding a pathogen is low.

The NWDP collects influenza A samples from feral swine for the USDA's Swine Health and Monitoring and Surveillance Program. This

surveillance program utilizes nasal swabs for direct detection of influenza A viruses that may be circulating in swine. In addition to the nasal swab, the NWDP collects a serum sample that is used to detect antibody to influenza A viruses.



The prevalence of influenza A positive nasal swabs and resulting viral isolates are lower than expected given the serological data from feral swine populations. Feral swine may also potentially be exposed to unique influenza subtypes that domestic swine have not been regularly exposed to, but this has been difficult to ascertain because of the limited samples available for isolation and genetic analysis. Research to understand duration of virus shedding

and antibody dynamics after experimental H3N2 influenza A virus infection in feral swine will help to understand and interpret NWDP surveillance data. Domestic swine typically shed influenza A virus for less than 10 days and this shedding

may be intermittent. Some domestic swine work indicates that influenza A antibody resulting from natural infections may persist out to 28 months.

The majority of domestic swine research suggests antibody detection longevity is more limited; however, some of these differences may be

associated with investigations that looked at protection provided by influenza A vaccines versus antibody duration due to viral transmission. It is possible that viral excretion levels, timing and antibody duration differ between feral and domestic swine due to differences in their genetics.

For more information contact Brandon Schmit,

Brandon.S.Schmit@aphis.usda.gov or

Fred Cunningham,

Fred.L.Cunningham@aphis.usda.gov.

The original artwork on this page was created by the National Wildlife Disease Program's Erika Kampe and Sarah Goff