

## SWINE HEALTH

**Title:** Investigation into the epidemiology of disease-associated *S. suis* strains NPB #19-115

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**Scientific Abstract:**

Disease-associated *Streptococcus suis* (DASS) is one of the most impactful bacterial diseases in swine worldwide. A key aspect to the control and prevention of DASS in swine farms hinges upon accurate detection of the disease-causing strains within the herd. This can be challenging due to its commensal nature, variability of on-farm sampling methodologies, and lack of feasible diagnostic methods that predict virulence with high sensitivity. Whole-genome sequencing revealed ST1 (serotype 1 or 14), ST28 (serotype 2 or 1/2), ST961 (serotype 2 or 1/2), ST108 (serotype 23), and ST977 (serotype 4 or 5) as the top 5 genotypes recovered from cases submitted for sequencing to the ISU VDL, and, thus, could be considered targets for autogenous vaccine development. Systemic sites isolates are optimal for detecting DASS compared to tonsil samples in clinical animals. A longitudinal study on two farms revealed in general tonsil and nasal swabs as samples of choice for detection of DASS in health animals compared to vaginal. Gilts and gilt litters were significantly more colonized with DASS ( $p < 0.05$ ) than sows and sow litters. Piglets were colonized with *S. suis* early after birth, with on average DASS prevalence between 35-64%. The prevalence of DASS colonization reduced at day seven and rose again at day 21 in both farms in the study. This work has given more insights into the target genotypes for autogenous vaccines using WGS. The RT-PCR assay developed can be used to track DASS in farms to design better control strategies.

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