

## SWINE HEALTH

**Title:** Development and validation of molecular-based tools to differentiate attenuated *Salmonella choleraesuis* vaccine strains from field isolates - **NPB #: 09-094**

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### Scientific Abstract:

The *Salmonella enterica* serovar *Choleraesuis* attenuated Argus vaccine strain is currently used in the United States as an aid to prevent and control infection by this pathogen in swine herds. Similarly to virulent *Salmonella Choleraesuis* field isolates, the attenuated Argus vaccine strain can be isolated from systemic sites in vaccinated pigs. The objective of this study was to develop a molecular based diagnostic tool for the rapid and accurate identification of the *S. Choleraesuis* Argus vaccine strain isolated from systemic sites of vaccinated pigs. Primers targeting the *crp* gene of *S. Choleraesuis* were designed and combined with previously published primers targeting the *fliC* gene in a multiplex PCR reaction. The multiplex PCR was validated using DNA extracted from isolates representing 19 *Salmonella* serotypes, 14 unrelated swine bacterial pathogens commonly isolated from swine tissues, 115 suspect Argus vaccine isolates and 101 field isolates recovered from clinical cases identified as *S. Choleraesuis*. The absence of a *crp* band and the presence of a *fliC* band (- *crp*/ + *fliC*) were uniquely identified in the Argus vaccine strain. *Salmonella Choleraesuis* isolates were identified based on the presence of both *crp* and *fliC* bands (+ *crp*/ + *fliC*), whereas additional *Salmonella* serovars were characterized by the presence of a *crp* band and absence of the *fliC* band (+ *crp*/ - *fliC*). None of these profiles were observed in non-*Salmonella* swine bacterial pathogens. The Argus vaccine profile (+*fliC*/ - *crp*) was not detected in 101 field *S. Choleraesuis* isolates. This profile was identified in 113/115 6,7:non-motile isolates recovered from herds using this vaccine.

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