

## PORK SAFETY

**Title:** Longitudinal study to determine *Salmonella* serovars and identify risk factors associated with their dissemination in commercial swine farm – NPB #12-001 revised

**Investigator:** Dr. Siddhartha Thakur

**Institution:** North Carolina State University

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### Scientific Abstract

The aim of this study was to characterize and compare *Salmonella* isolates from pig and environmental sources in conventional swine farms on a phenotypic and genotypic level. Isolates were previously obtained during a longitudinal study examining the prevalence and distribution of *Salmonella* in ten cohorts of conventional swine and their environment throughout the production chain (farrowing to slaughter). Fresh fecal samples (10 g) were collected from piglets using sterile fecal loops (Webster Veterinary, Devens, MA), and from their respective sows, to aid in the determination of the transmission of *Salmonella* from sows to piglets at birth. Similarly, fecal samples were collected from the ear tagged pigs twice at each of nursery and finishing stages using gloved hands. Environmental samples also were collected at every stage of sampling to determine the role played by the environment as a reservoir and in the transmission of *Salmonella* to/from the pigs. Overall, we collected a total of 1650 fecal, 250 each of feed, water, floor swabs, 245 lagoon and 80 inter-farm truck samples from 30 (representing 10 cohorts of pigs) conventional farms and their environment. These isolates were submitted to the National Veterinary Science Laboratory for serotyping. We identified 22 different serotypes of *Salmonella*, with the predominate serotype being S. Typhimurium (33.7%), followed by S. Infantis (16.4%), S. Derby (11.4%), S. Anatum (9.1%) and S. Ouakam (7.8%). A representative subset of 272 isolates was also characterized on the genotypic level using the gold-standard method of PFGE. PFGE analysis identified 47 clusters with 100% genotypic similarity among pig, environment and slaughter isolates both within and between sample cohorts. The dynamics of *Salmonella* prevalence in pigs and carcasses were reciprocated in the farm and slaughter environment clearly indicating an exchange of this pathogen between the pigs and their surroundings. These results indicate the important role played by the farm and slaughter environment in the persistence and dissemination of *Salmonella* on conventional swine farms.

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For more information contact:

National Pork Board • PO Box 9114 • Des Moines, IA 50306 USA • 800-456-7675 • Fax: 515-223-2646 • [pork.org](http://pork.org)

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