Project Title: Within bovine carcass distribution of *Salmonella* subtypes isolated from peripheral lymph nodes and fecal samples

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Objective/Hypothesis: The aims of this study were to evaluate statistical dependency of *Salmonella* within various lymph nodes of a same bovine carcass and to highlight the patterns of the spread of *Salmonella* within six peripheral lymph nodes of a same bovine carcass.

Experimental treatments: Samples were collected from 100 carcasses across 4 separate days in October 2012. From each carcass, 6 peripheral lymph nodes were collected: left and right subiliac, prescapular, and popliteal nodes. Matched fecal samples were collected from 64 animals. Two *Salmonella* strains were isolated from each sample and DNA extractions were performed for each strain. The molecular subtyping method was based on the amplification and the sequencing of the Clustered Regularly Interspaced Short Palindromic Repeat (CRISPR) B locus of each strain.

Key Results: *Salmonella* was recovered from 32.0 and 75.0% of the lymph node and fecal samples, respectively. The likelihood of recovering *Salmonella* reduced over the month in that *Salmonella* was isolated from 58.9, 56.1, 15.8 and 9.1% of lymph node samples and 80.0, 100.0, 95.0 and 47.8% of fecal samples across the 4 sample days.

The preliminary results of the analysis of the CRISPR B sequences provided 204 different spacers associated into 13 combinations, each presumably related to a different clone of *Salmonella* (named A to M). Out of the 204 spacers, 51 were not previously recorded into the Pasteur Institute database. Strains isolated from the first sample day were associated to 11

clones. With the second sample day, two additional clones L and M were characterized. Among all the analyzed samples, the clone C is the most prevalent (18.31%).

How this information can be applied in the industry? A large diversity of clones can be recovered within the same carcass. This observation leads to the hypothesis that the observed prevalence of *Salmonella* within peripheral lymph nodes of cattle at harvest results from multiple exposures and therefore multiple infections of the animal by *Salmonella*. This information highlights the challenges but also opportunities for development of effective pre-harvest control strategies.

Prevalence of *Salmonella* by lymph node type at days of sample collection