

INVESTIGATING *SALMONELLA*

IN THE CATTLE PRODUCTION IN FRANCE

Laetitia Bonifait, Louise Baugé, Françoise Le Gall,

Martine Denis and Marianne Chemaly

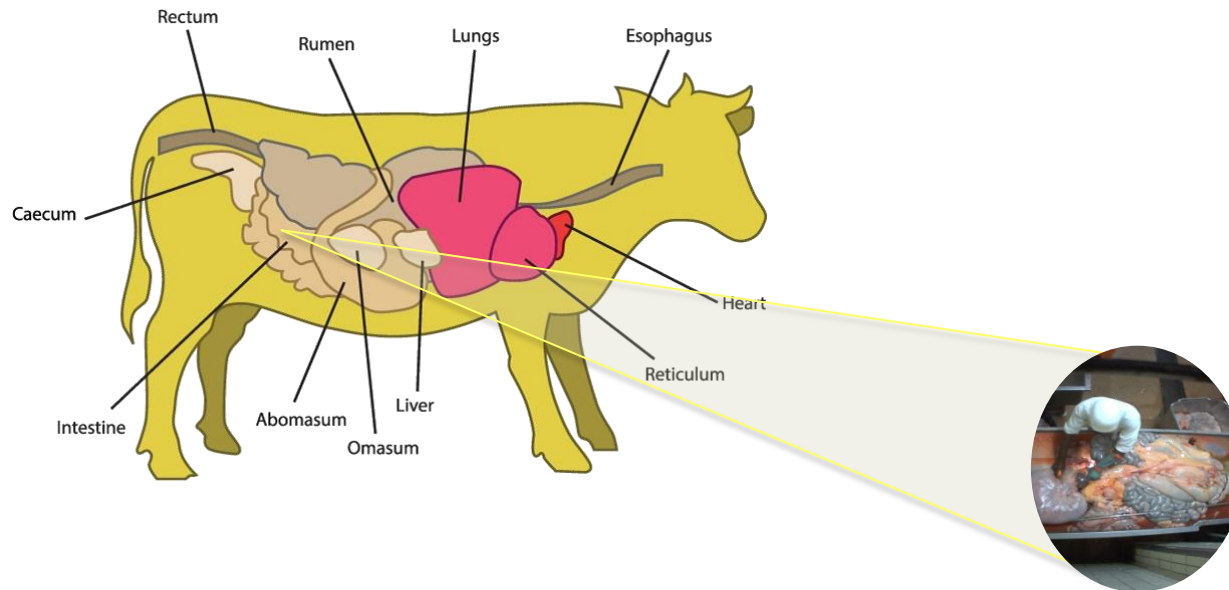
Introduction

- *Salmonella* spp. are part of the most important cause of food-borne bacterial gastroenteritis in developed countries
- Cases of salmonellosis are often associated with poultry products and cattle production
- Transmission may occur throughout :
 - Environment
 - Close contact with sick animals
 - Derived products (meat, dairy products)



Material and methods : Sampling

- A total of 959 intestinal samples, from one of the largest slaughterhouses in France were analyzed
 - Randomly collected from the slaughter line at the evisceration stage
 - Over a period of 6 months (July to December 2016)
 - Fifty samples per week



Material and methods : Detection

- 959 intestinal samples



- 476 calves (< 8 months)
- 483 cattle adults

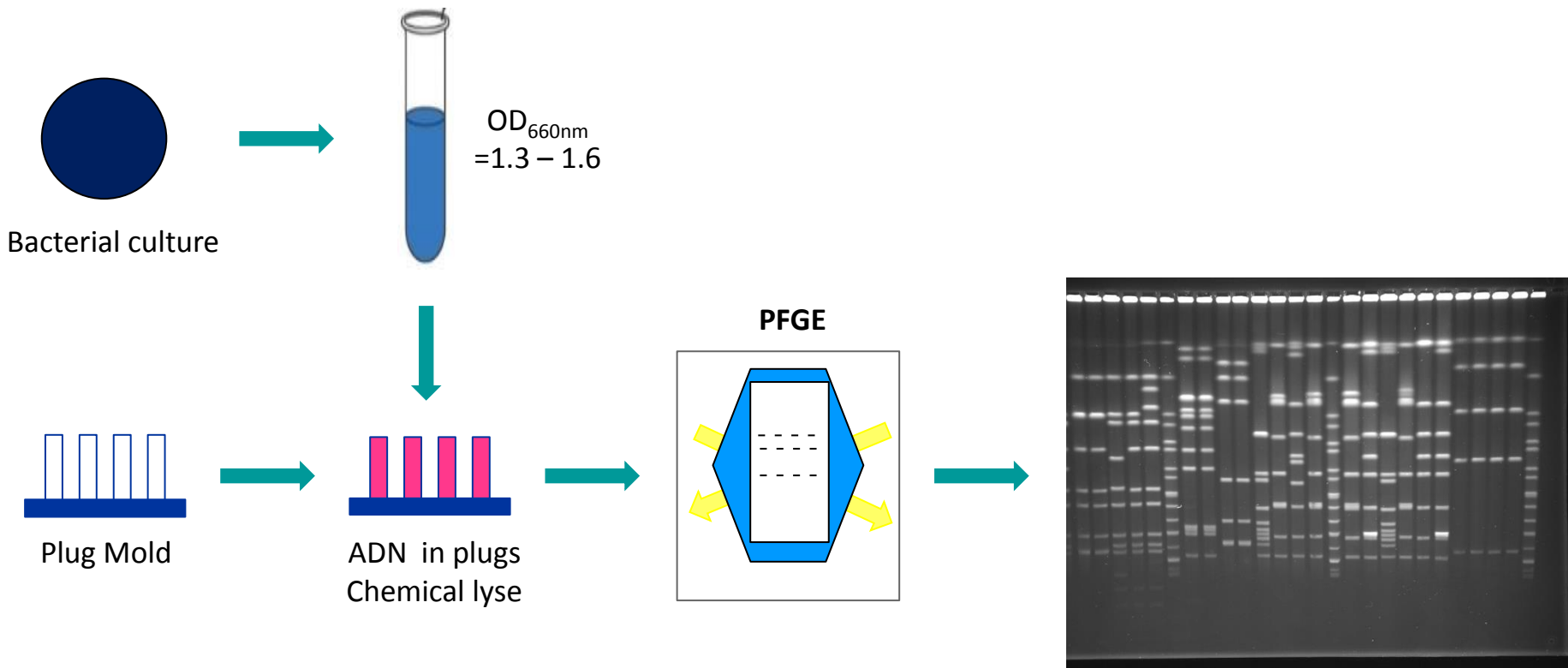


- Detection of *Salmonella* spp. according to the NF EN ISO 6579-1 standard
- Enumeration of *Salmonella* spp. according to the XP CEN ISO/TS 6579-2 standard



Material and methods : Characterization

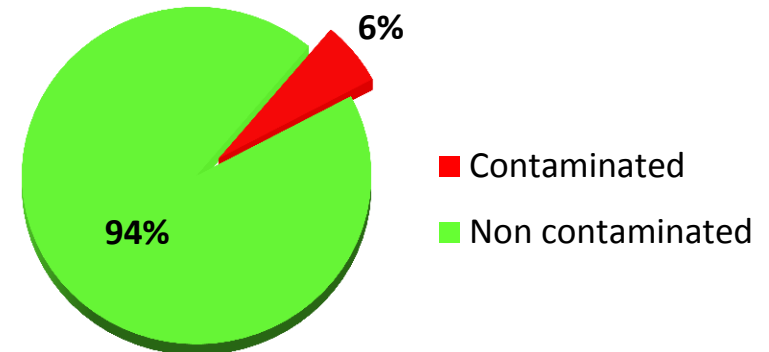
- All isolated strains were analyzed by PFGE using the restriction enzymes
 - *Xba*I and *Bln*I



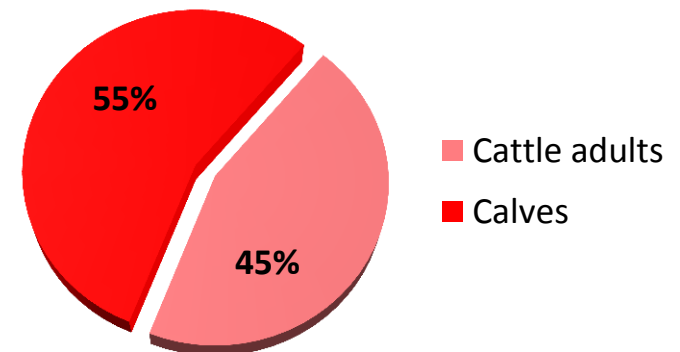
Data Analysis

Prevalence of *Salmonella* in cattle production

- Only 29 were positive for *Salmonella* spp.
 - 3% prevalence in the cattle production



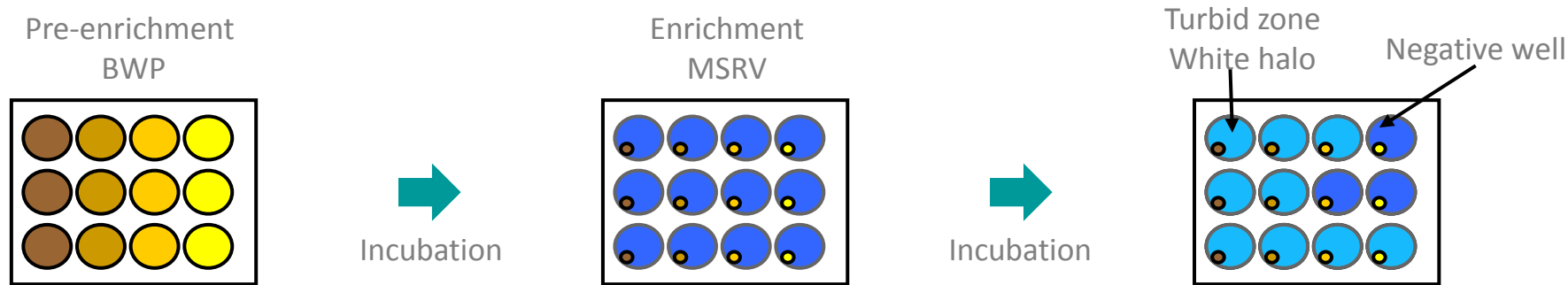
- Among the positive samples
 - 55% of isolates are from intestinal contents of calves
 - 45% of the isolates are from intestinal contents of cattle adults



- Any preference for *Salmonella* contamination according to the age of the cattle

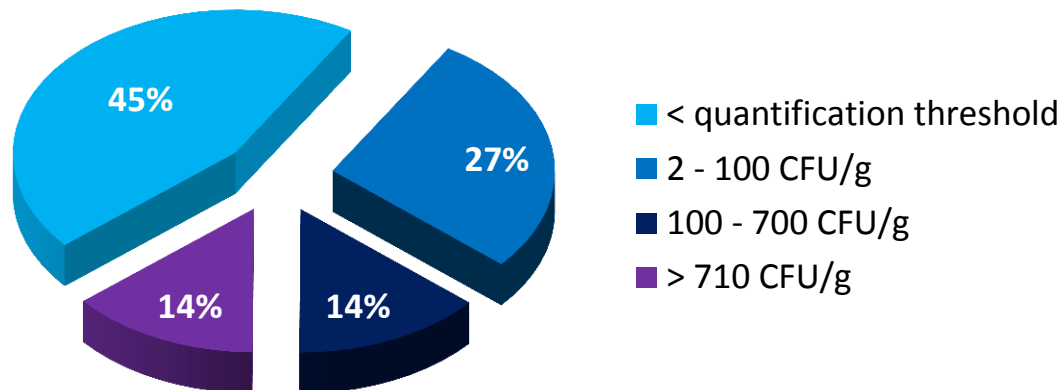
Enumeration of *Salmonella* in cattle production

- Enumeration of *Salmonella* spp. according to the ISO Standard (Methods)



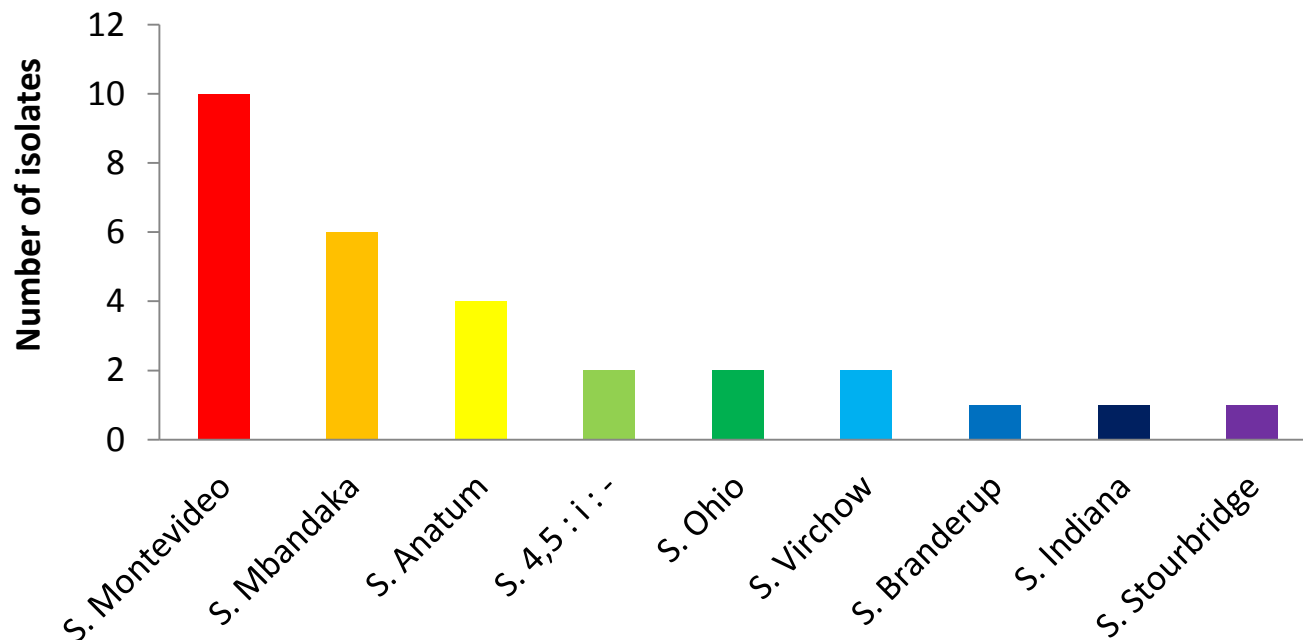
Calculate the MPN (most probable number)

- Among the positive samples
 - 55% of samples could be quantified



Identification of *Salmonella* in cattle production

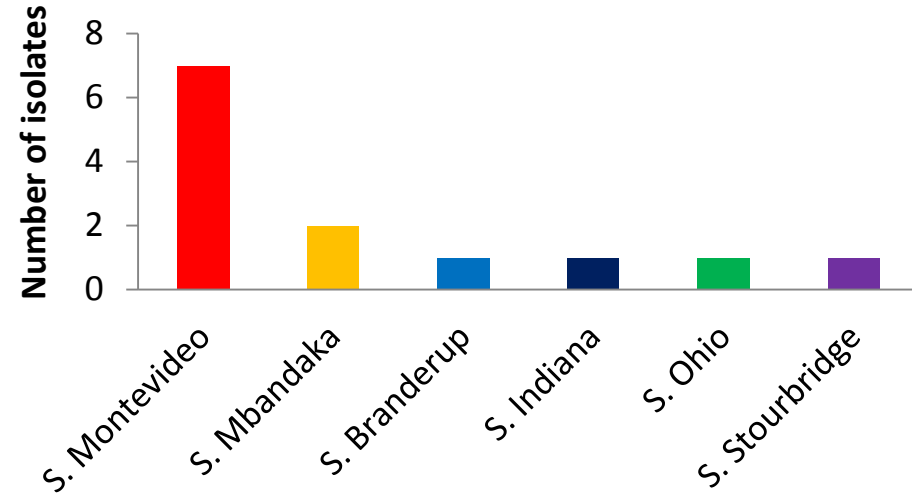
- Nine serovars of *Salmonella* have been identified
 - *Salmonella* Montevideo is the most prevalent serovar (34%)
 - *Salmonella* Mbandaka (20%)
 - *Salmonella* Anatum (13%)



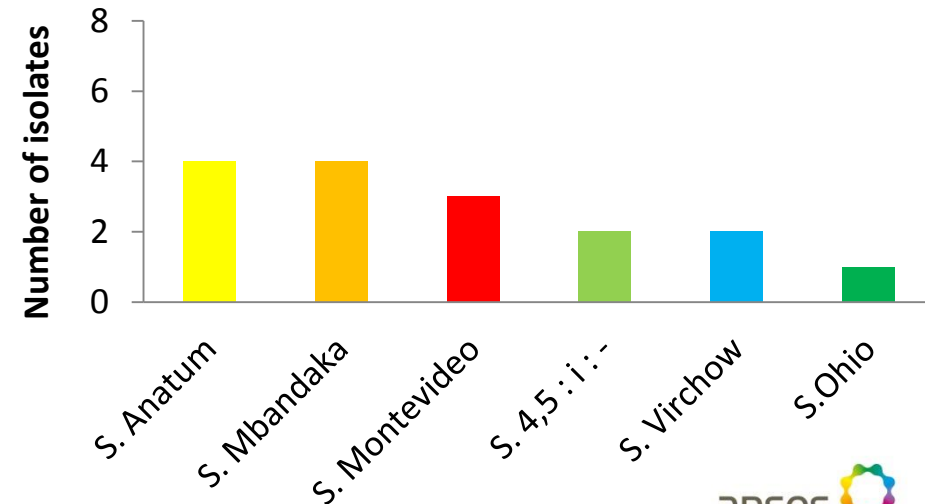
Repartition of *Salmonella* serovars

- Slightly different between cattle adults and calves
- Predominance of *S. Montevideo* in cattle adults
- *S. Anatum* only present in calves

Cattle adults

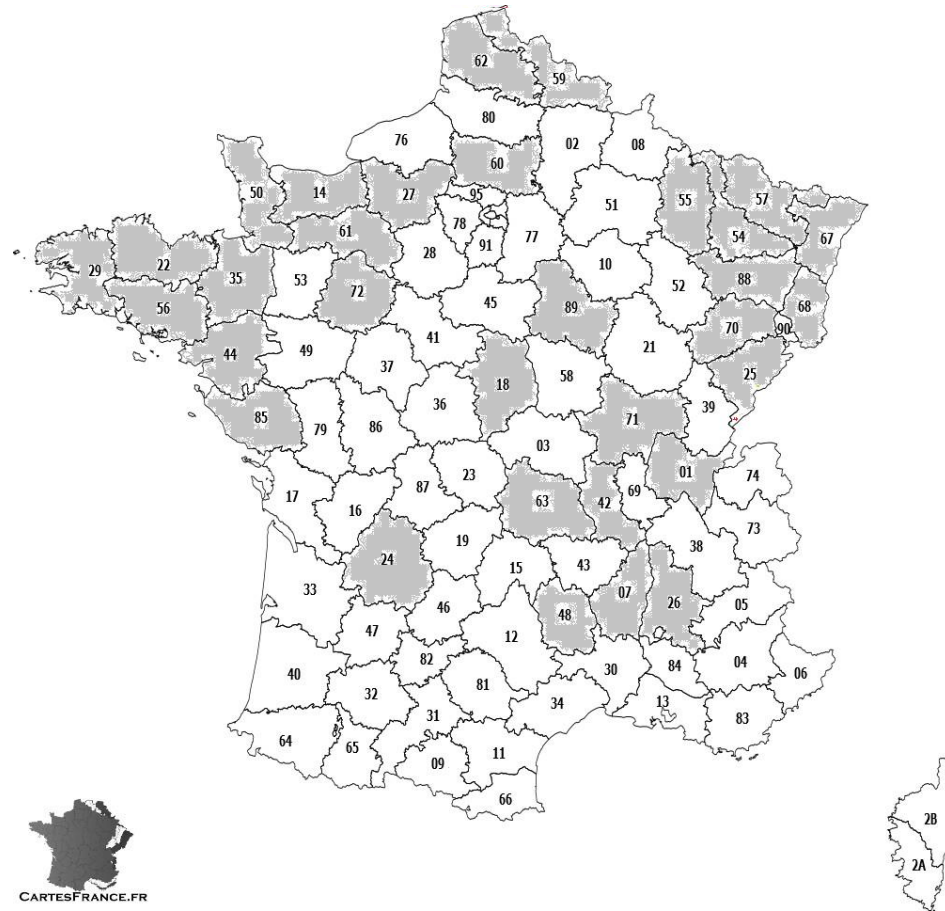


Calves



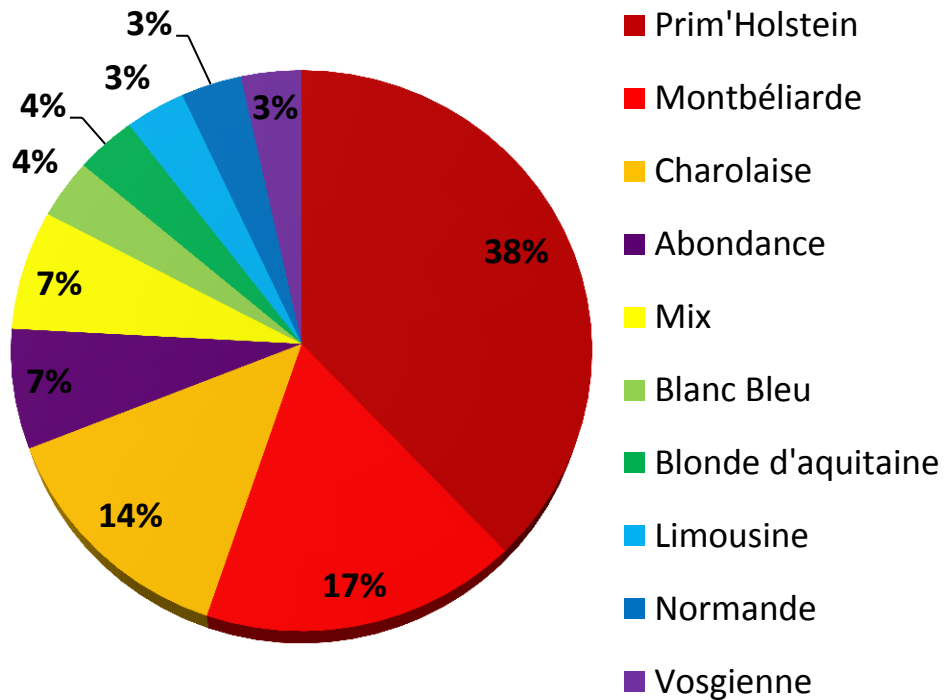
Geographical distribution of *Salmonella*

- Breeding from 32 French areas
- 14/32 French areas showed *Salmonella* detection
- No influence on geographical distribution *Salmonella* contamination



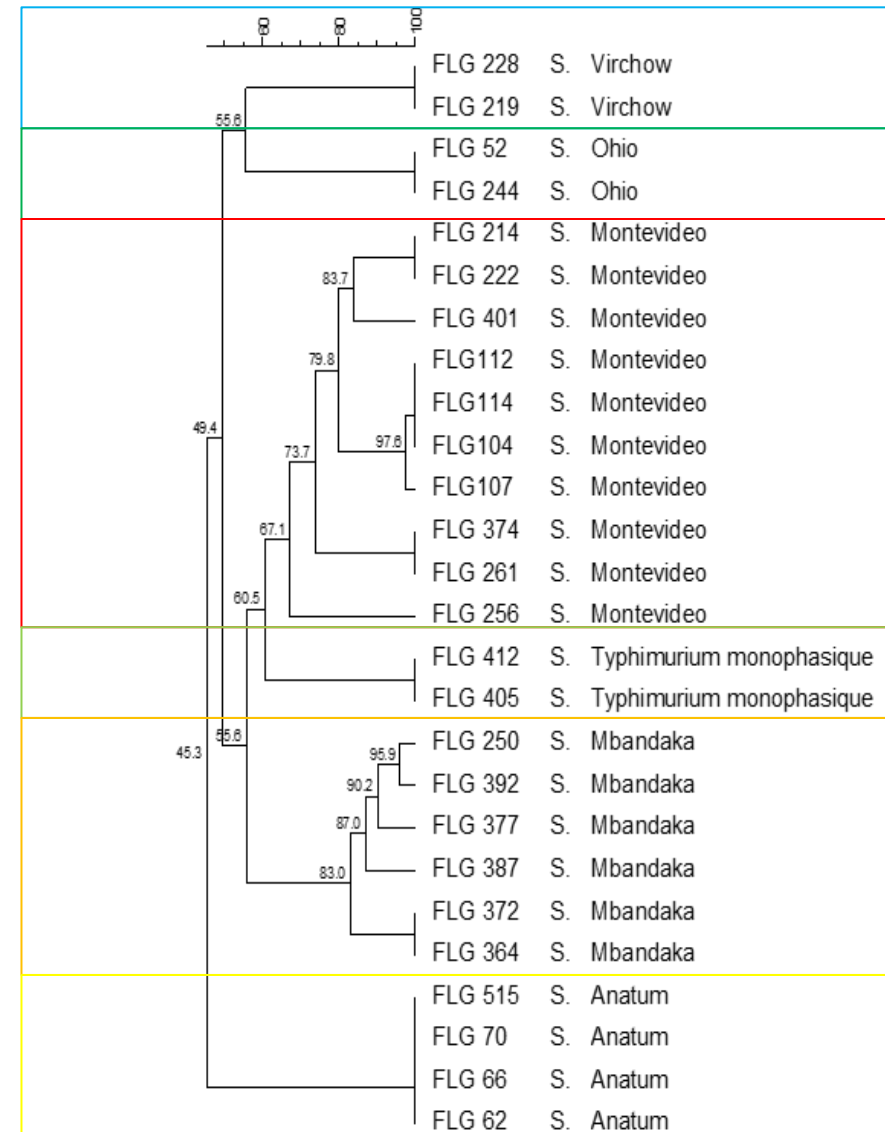
Influence of Cattle breeds

- Several cattle breeds
- Any breed influence on *Salmonella* contamination



Genotyping of *Salmonella* in cattle production

- Genotyping showed different clusters of isolates by serovars
- Some isolates presented 100% of similarity using two restriction enzymes (*Xba*I and *Bln*I)



Conclusions

- This investigation allowed for the first time the estimation of the intestinal carriage of *Salmonella* by cattle in France
 - 3% prevalence in the cattle production
 - *Salmonella* Montevideo was the most prevalent
- Genotyping highlighted associate isolates originated from different French areas and from different animal breeds

Perspectives

- Compare the isolates from this investigation to isolates presenting a possible epidemiological link from the avian production



Acknowledgments

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THANK YOU

FOR YOUR ATTENTION

