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IDENTIFICATION OF 30 CLONAL COMPLEXES
FROM THE MILK PRODUCTION SECTOR**

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LISTERIA MONOCYTOGENES: HIGH-THROUGHPUT REAL-TIME PCR IDENTIFICATION OF 30 CLONAL COMPLEXES FROM THE MILK PRODUCTION SECTOR

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INTRODUCTION/CONTEXT

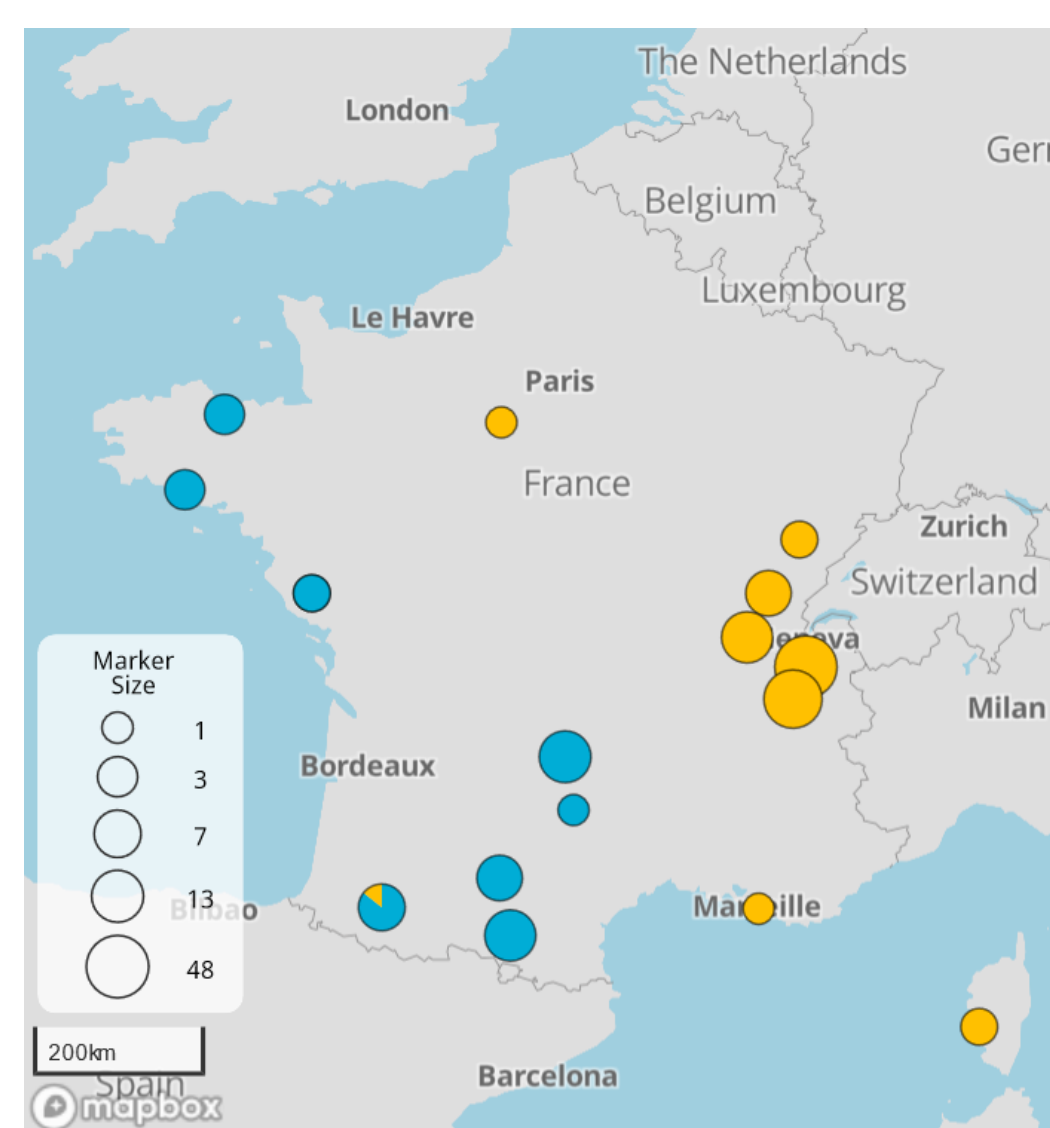
Listeria monocytogenes (*Lm*) is a bacterium that causes a food-borne illness, the Listeriosis. The rapid screening of the strains is crucial to conduct investigation and understand the entry and the transfer of *Lm* in the production sites. A new method based on 36 real-time PCR assays was developed in 2021 by ANSES as an alternative for the characterization of 30 *Lm* multi locus sequence typing (MLST) clonal complexes (CC) obtained conventionally by whole genome sequencing (WGS). The CCs are a universal language for strain typing and provide information on strain virulence.

OBJECTIVE

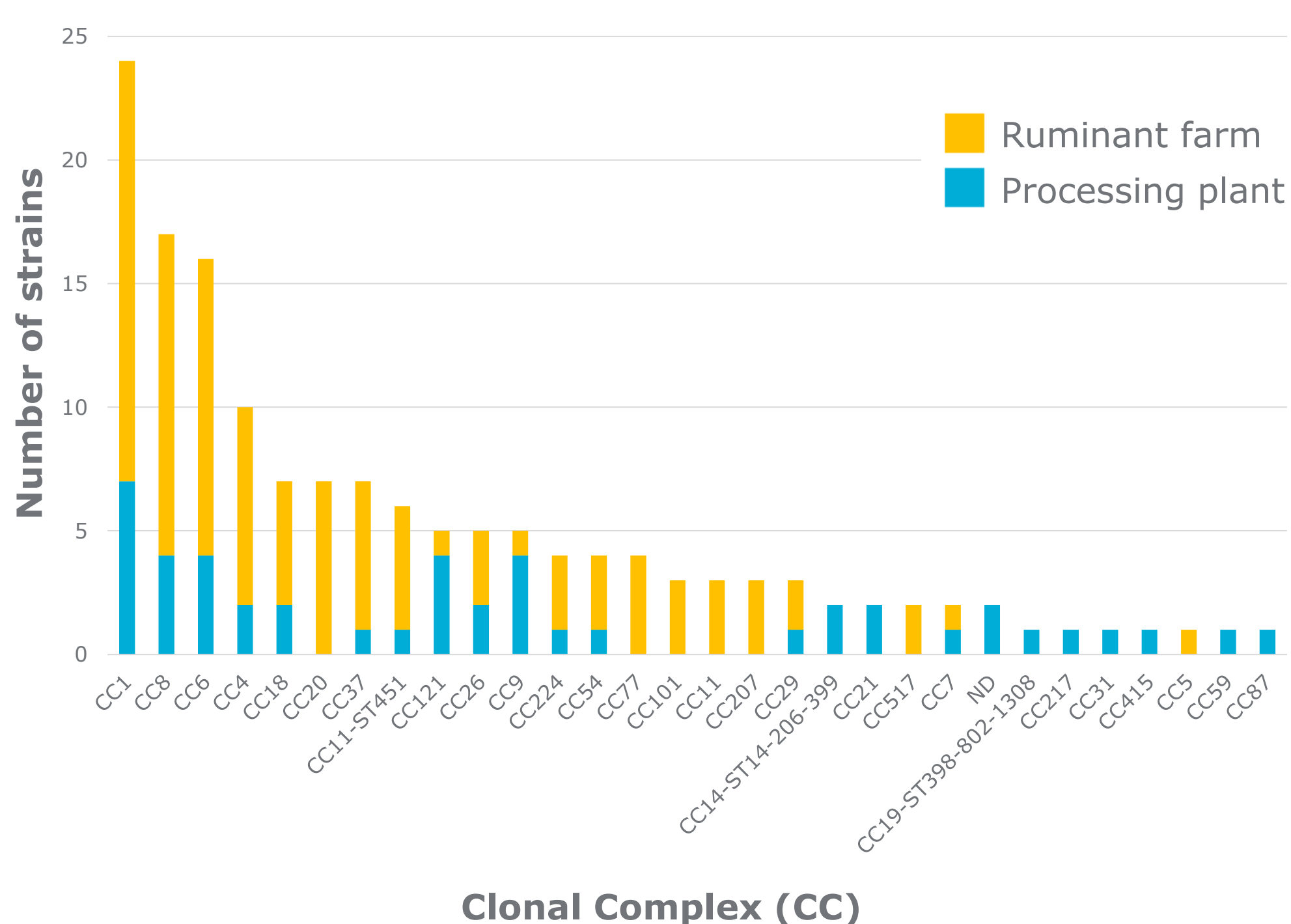
To assess the strain CC diversity between two production compartments - processing plant - and - ruminant farm.

MATERIALS & METHODS

A total of 150 strains were isolated over 2019-2022, 47 from dairy processing plants and 103 from ruminant farms (mostly bovine) in sixteen French departments. These strains were typed by high throughput real-time PCR. When not identified, they were typed either by PFGE (Pulsed-field gel electrophoresis) via MLST CC mapping or whole genome sequencing (WGS).



RESULTS & DISCUSSION



Overall, 92% (n=138) of the strains were typable by real-time PCR. Thirty CCs were identified among the 150 strains. Most of them were common to both compartments, 81% (n=122). The strains CC9 and CC121 were rare at farm level but frequent in the processing plants. The three clones CC1, CC6 and CC8 were frequent in both compartments. Among them CC1 and CC6 were shown as hypervirulent for humans and animal underlying transmission of these clones from primary production. The routes of transmission of these clones remain to be defined, considering that processing plant process pasteurized milk.

CONCLUSION/PERSPECTIVES

The multiplex real time PCR method represents a key tool for assisting food laboratories to establish strain relatedness and for helping food business operators by improving their microbiological management plans.

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Safety & Quality - Microbiology



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