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MRSA and MSSA ST398 in French companion animals : a One Health concern

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Introduction

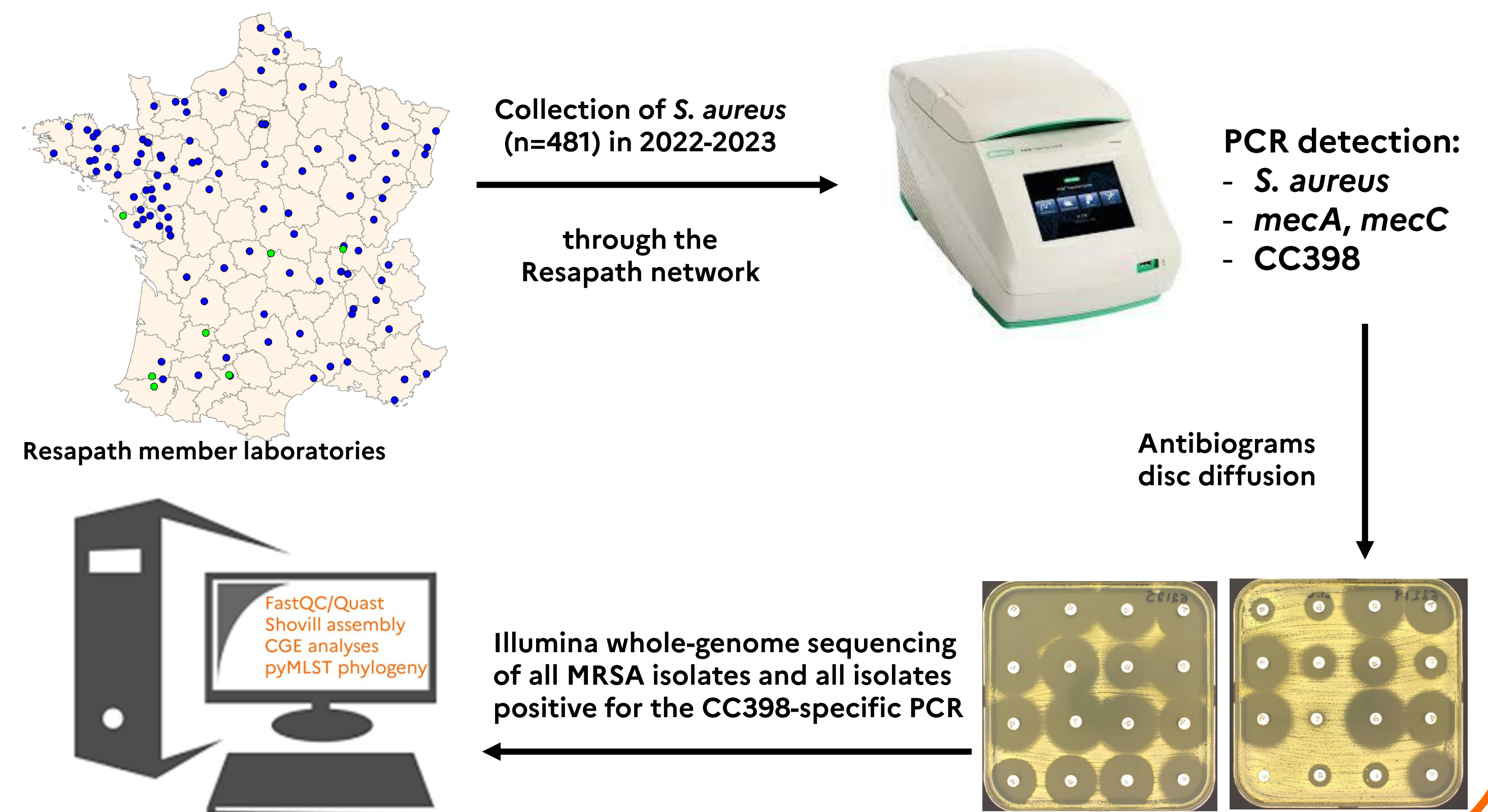
Methicillin-resistance in *S. aureus* from animals is often seen through the prism of **MRSA ST398 in livestock**.

However, **human-related MSSA and MRSA** clones have also been reported in companion animals (1, 2).

Following reports on a significant increase of the MRSA prevalence in pigs in France, we investigated cats, dogs and horses, and aimed at:

- determining the **prevalence of MRSA**
- identifying and **characterizing MSSA ST398** isolates

Materials and Methods



Results

MRSA

- High proportion in **horses** (29.1%) (Fig. 1)
- Lower proportions in cats and dogs (6-7%)
- 66 *mecA*-positive isolates and one *mecC*-positive isolate from a cat
- The ST398 clone is **prevalent among MRSA**
 - ✓ 38.5% for cats and horses
 - ✓ 22% for dogs

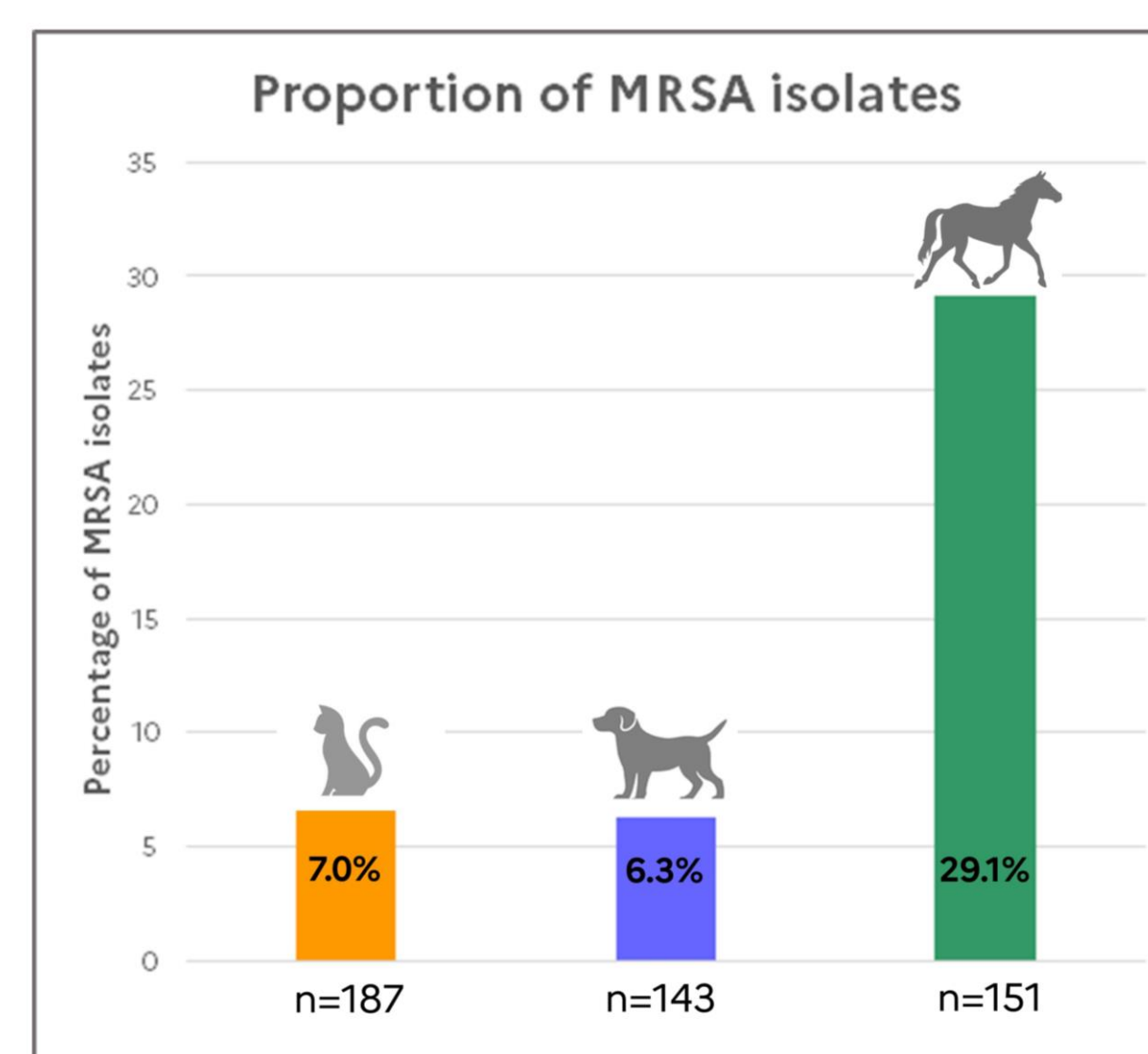


Fig 1. Proportion of MRSA depending on the host.

MSSA CC398

- MSSA ST398 frequent in **cats** (23.5%) (Fig. 2)
- MSSA ST398 isolates are **similar to human** isolates causing severe infections
- MSSA ST398 are more prevalent in cats and dogs, contrarily to horses

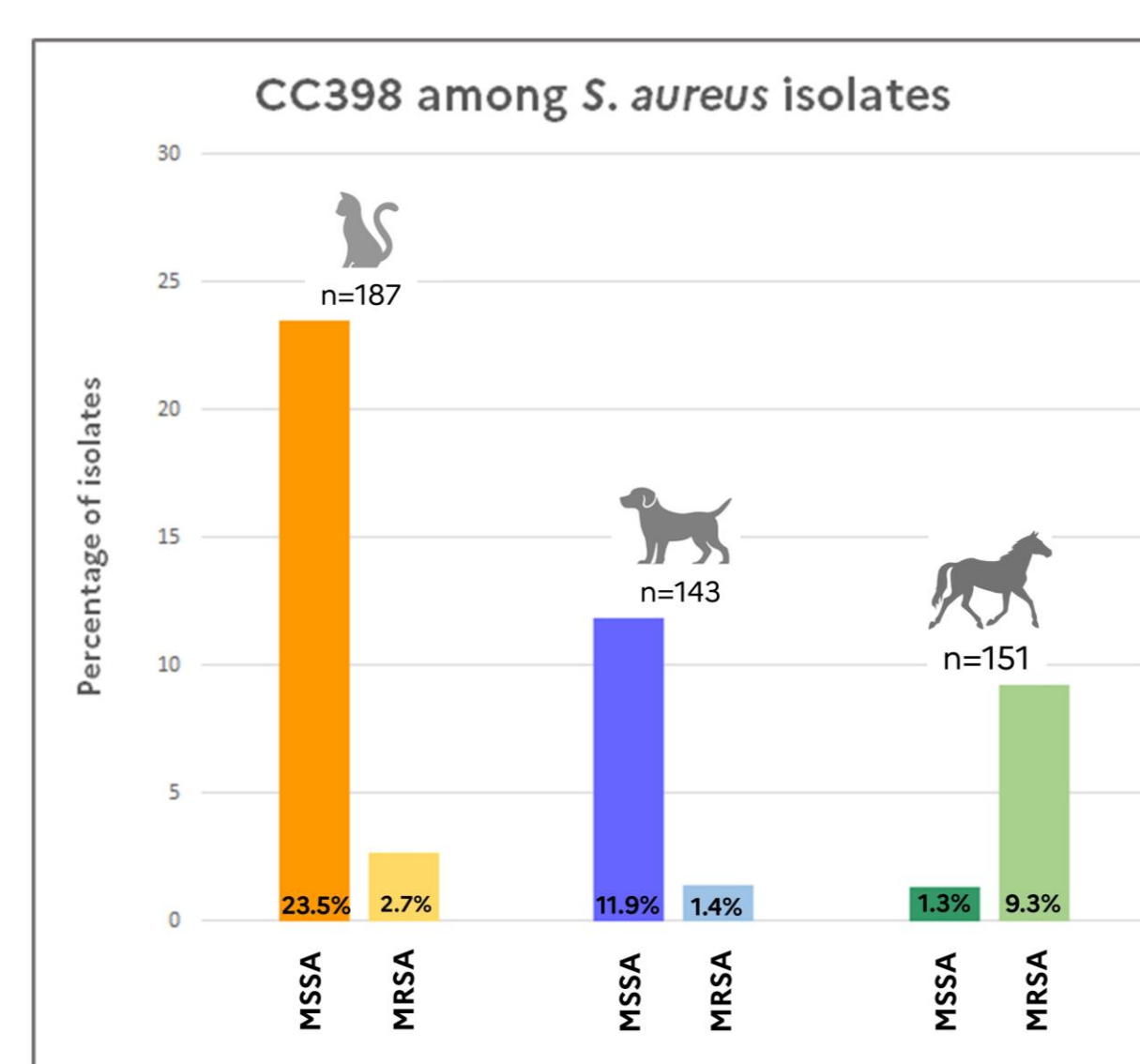


Fig 2. Proportion of MSSA and MRSA isolates belonging to the CC398 clone. Percentages are given compared to the whole collection (n=481).

Genomic results

- Horses:
 - ✓ Emergence of MRSA **ST612** in horses
 - ✓ MRSA **ST398 t011** specific to horses
- Cats and dogs
 - ✓ Carriers of **human-associated** isolates
- *erm(C)* in ST612, *erm(T)* in MSSA ST398
- *tet(M)* in MRSA ST398

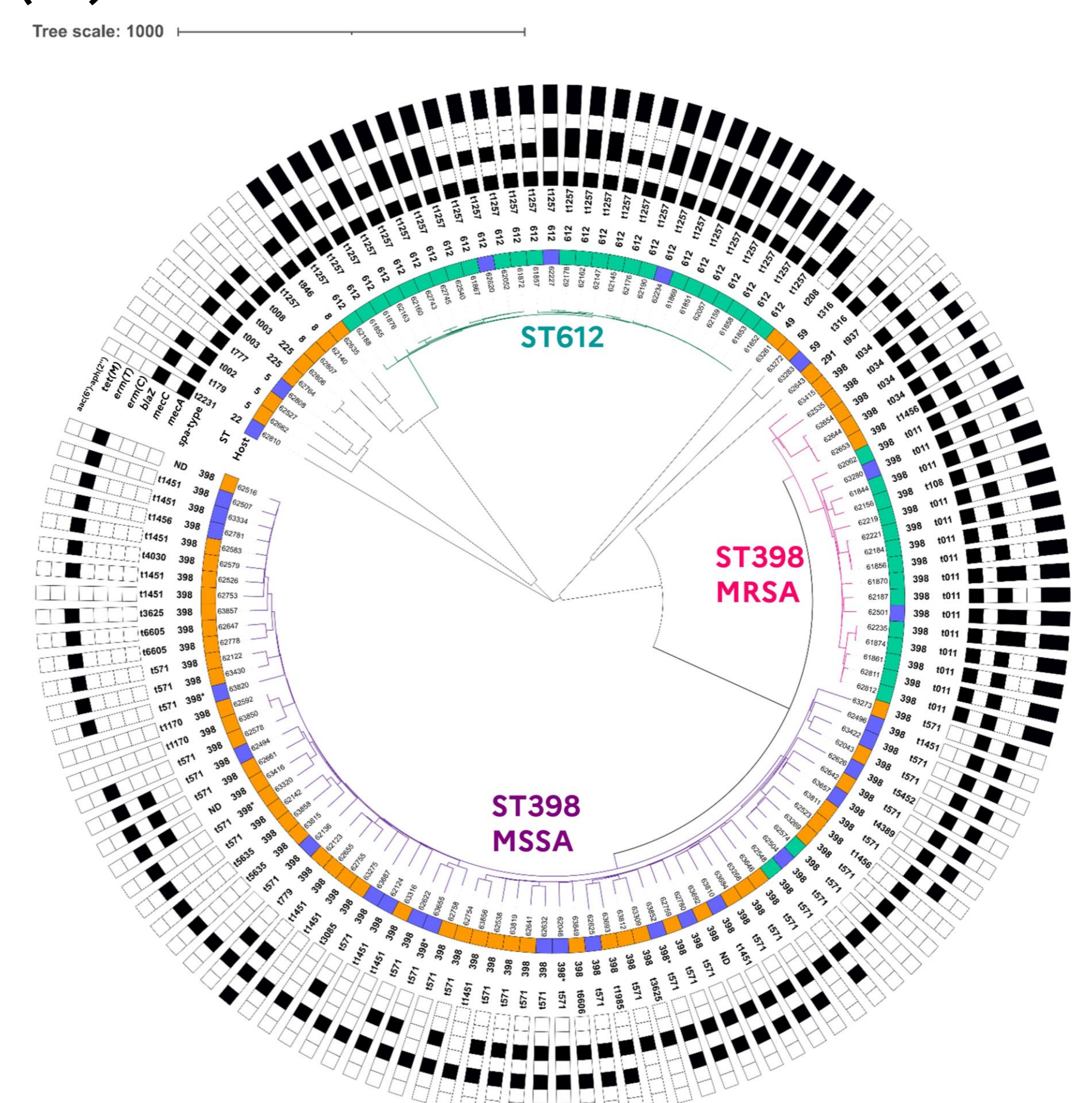


Fig 3. cgMLST-based phylogeny visualized using iTOL v6

Discussion

- The prevalence of MRSA is particularly high in **horses** (29.1%), lower in cats (7.0%) and dogs (6.3%).
- Emergence of the MRSA **ST612** clone in horses, already described in equine in Australia and South Africa (3).
- In cats and dogs, MRSA **ST398** (7/21) and **human-associated** STs (9/21) are frequently identified.
- Identification of **MSSA ST398** in 13.1% of the companion animals (63/481).
- Cats are confirmed as a **reservoir of MSSA ST398** (44/187, 23.5%) **highly similar** to those causing human bacteremia.
- EU-monitoring of both MRSA and MSSA in dogs, cats and horses should be considered.