



**HAL**  
open science

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

Marisa Haenni, Séverine Murri, Iarimino Rafinarivo, Pauline François, Jean  
Yves Madec

### **► To cite this version:**

Marisa Haenni, Séverine Murri, Iarimino Rafinarivo, Pauline François, Jean Yves Madec. MRSA and MSSA ST398 in French companion animals: a One Health concern. 34th European Congress of Clinical Microbiology & Infectious Diseases, Apr 2024, Barcelona, Spain. 2024. anses-04564967

**HAL Id: anses-04564967**

**<https://anses.hal.science/anses-04564967>**

Submitted on 1 May 2024

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



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

Marisa Haenni, Séverine Murri, Larimino Rafidinarivo, Pauline François and Jean-Yves Madec  
ANSES – Université de Lyon, Unité Antibiorésistance et Virulence Bactériennes - Lyon (France)

## Introduction

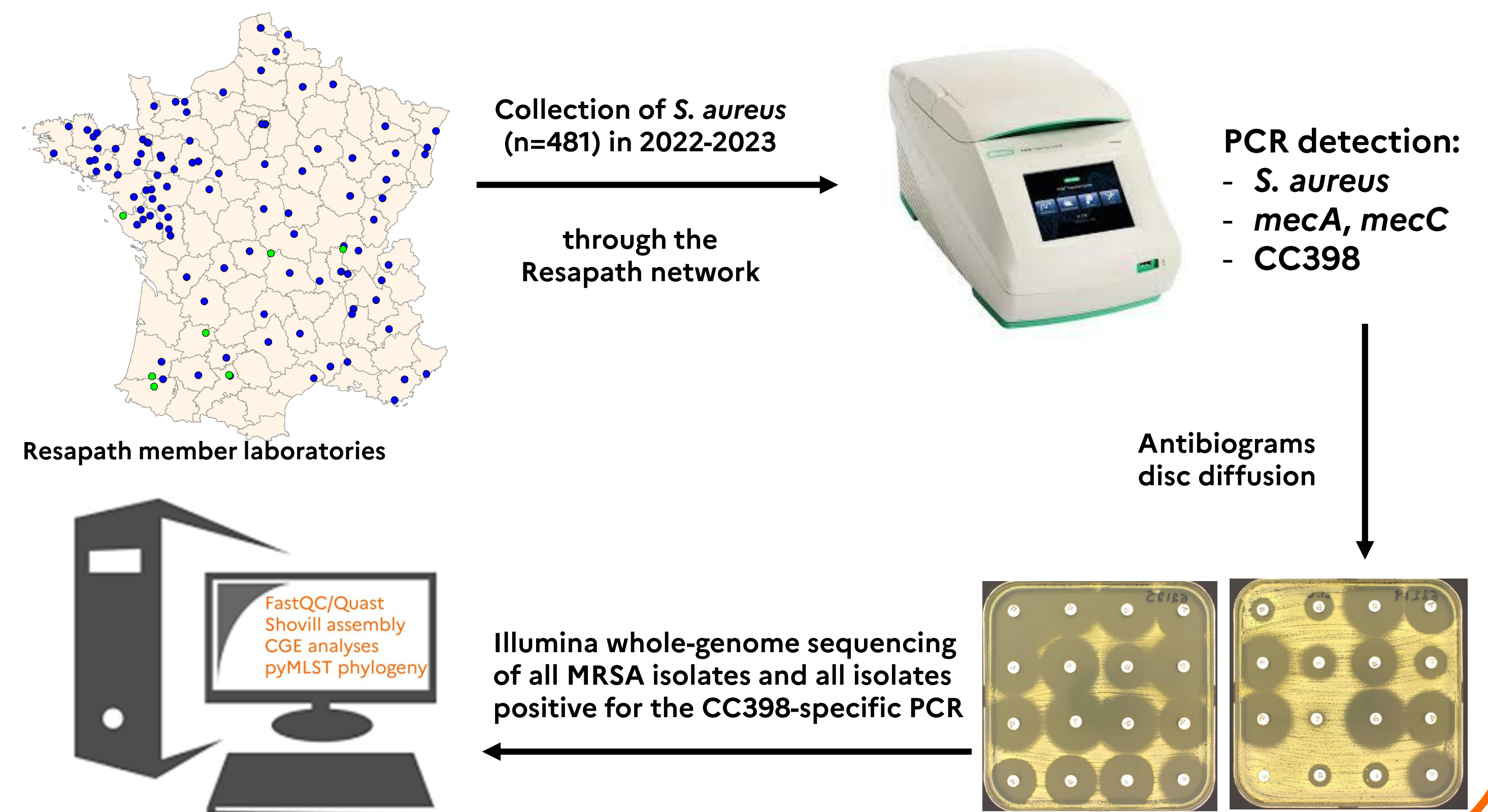
Methicillin-resistance in *S. aureus* from animals is often seen through the prism of **MRSA ST398 in livestock**.

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

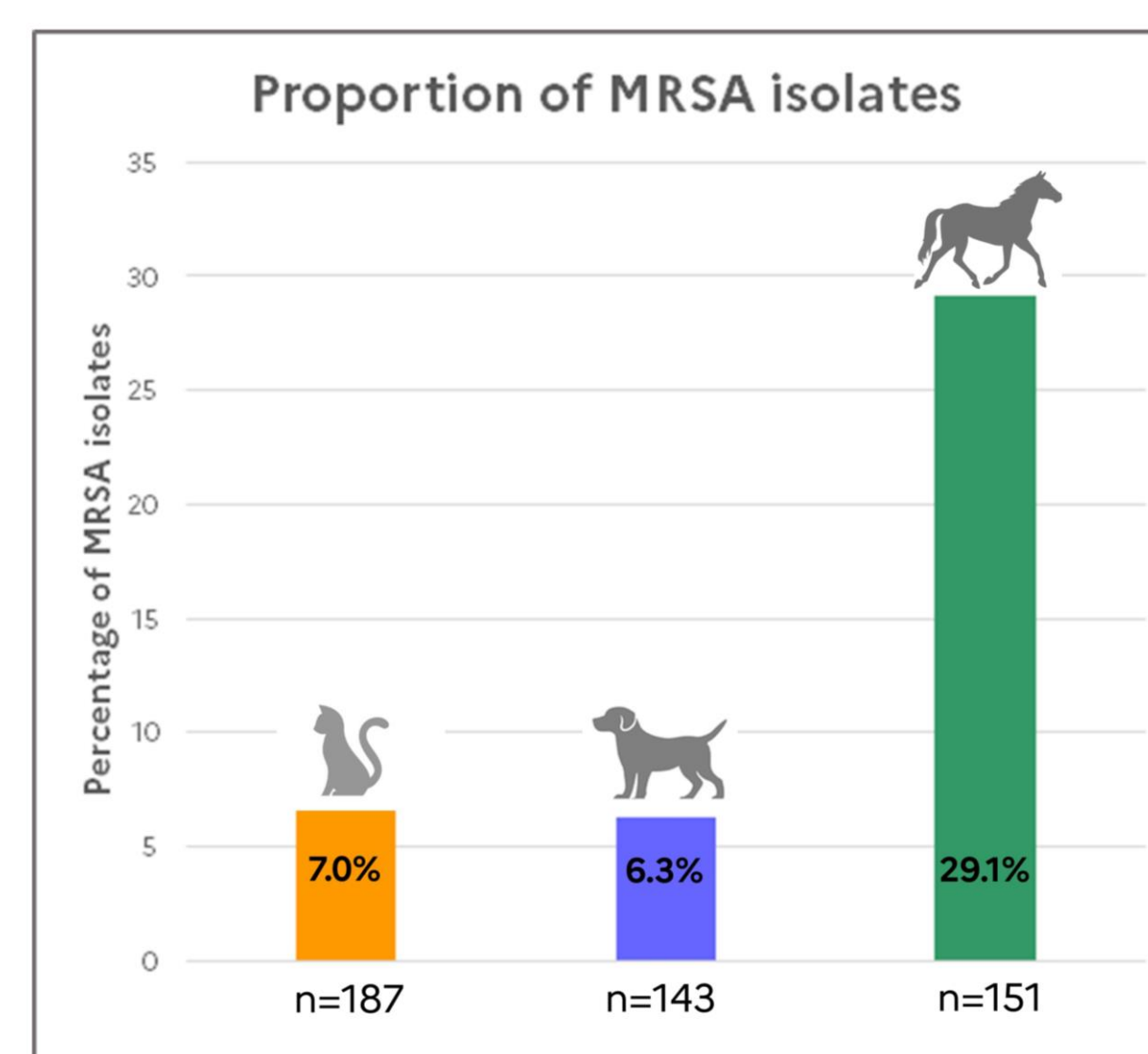


Fig 1. Proportion of MRSA depending on the host.

### 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

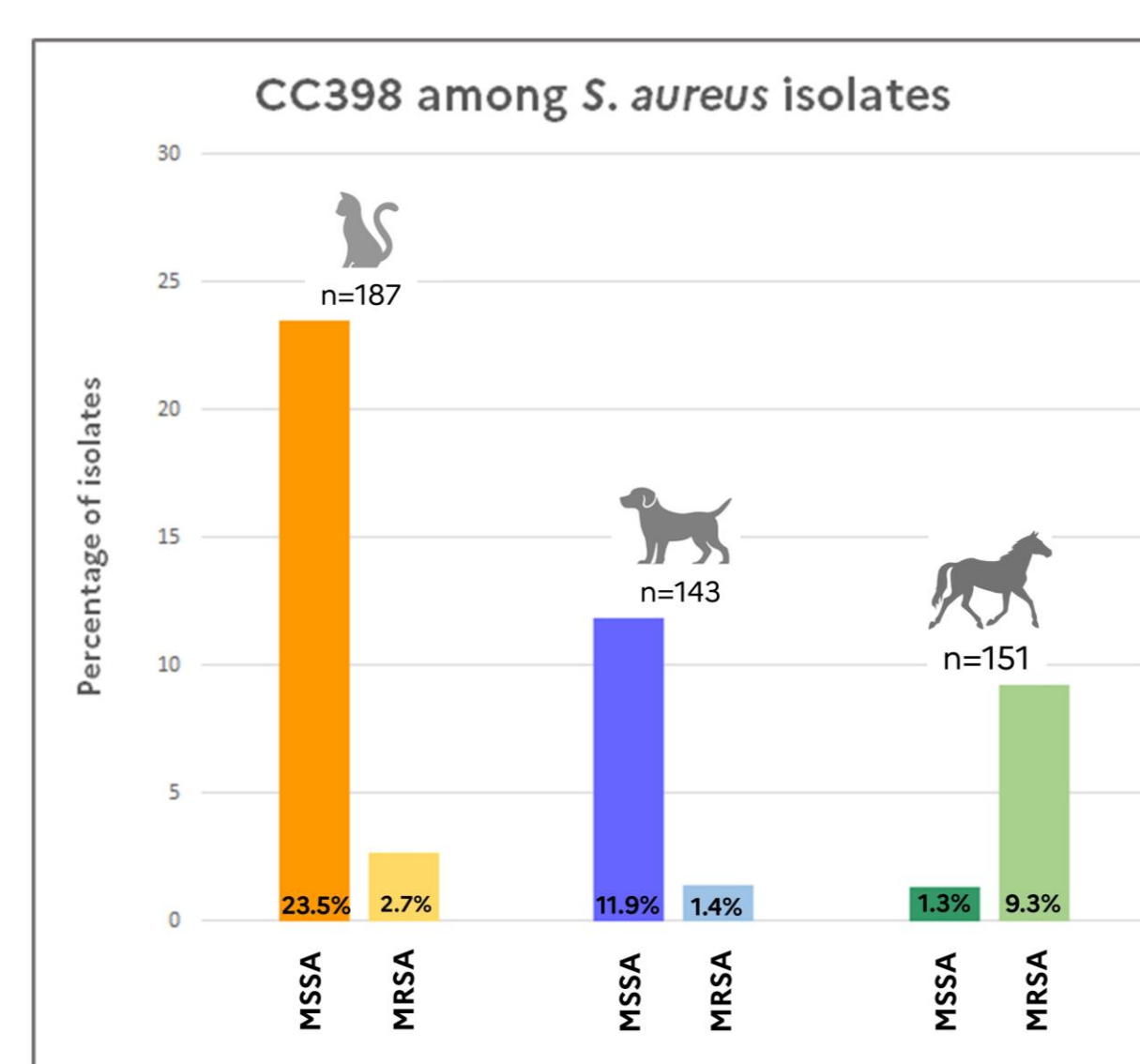


Fig 2. Proportion of MSSA and MRSA isolates belonging to the CC398 clone. Percentages are given compared to the whole collection (n=481).

## 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

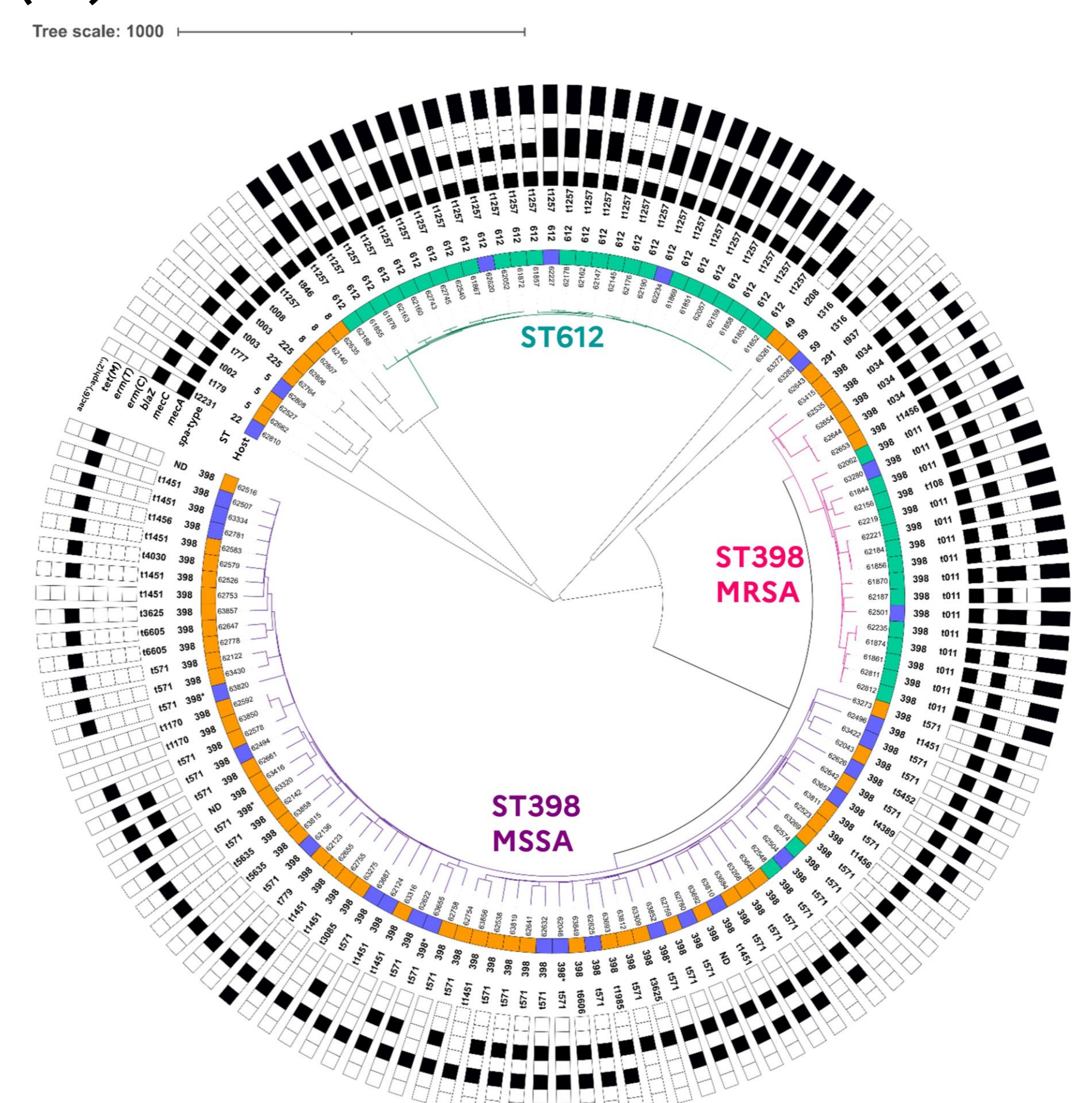


Fig 3. cgMLST-based phylogeny visualized using iTOL v6

## 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.