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**Asymptomatic carriers of equine piroplasmosis:  
prevalence differences between 4 French regions and low  
genetic diversity of Theileria equi and Babesia caballi**

Maggy Jouglin, Florian Berquier, Claire Bonsergent, Nathalie de la Cotte,  
Celine Bizon, Aymeric Bohec, Anne Couroucé, Olivia Guibert, Elodie  
Lallemand, Louise Lemonnier, et al.

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# Asymptomatic carriers of equine piroplasmosis

## Prevalence differences between 4 French regions

## Low genetic diversity of *Theileria equi* and *Babesia caballi*



INRAE



Jouglin M<sup>1</sup>, Berquier F<sup>1</sup>, Bonsergent C<sup>1</sup>, de la Cotte N<sup>1</sup>, Bizon C<sup>2</sup>, Bohec A<sup>3</sup>, Couroucé A<sup>2</sup>, Guibert O<sup>3</sup>, Lallemand E<sup>4</sup>, Laumonier, L<sup>2</sup>, Leblond A<sup>3</sup>, Leroux O<sup>2</sup>, Marano I<sup>4</sup>, Muzard A<sup>2</sup>, Prévôt A<sup>3</sup>, Quéré E<sup>5</sup>, Thirouin M<sup>3</sup>, Toussaint M<sup>4</sup>, Agoulon A<sup>1</sup>, **Malandrin L<sup>1</sup>**

- 1 Oniris, INRAE, BIOEPAR, Nantes
- 2 Oniris, Cisco, Nantes
- 3 VetAgro Sup, Lyon
- 4 ENVT, Toulouse
- 5 ENVA, Maisons Alfort

### Equine piroplasmosis

- tick-borne disease
- worldwide distribution with few indemn countries imposing import restrictions
- clinical, subclinical or asymptomatic with long term carriers (4 years to life long)
- two etiological blood parasites: *Babesia caballi* and *Theileria equi*
- great genetic diversity of both species: several cryptic species?

### Objectives

- to evaluate the prevalence of piroplasmosis carriers in different regions of France
- to genotype french isolates

### The study

- piroplasmosis asymptomatic equids in 4 geographical regions around the veterinary school focal points
- blood samples, consents and questionnaires – 2019 to 2022
- nPCR specific for each parasite species, partial 18S rRNA sequencing and phylogenetic analysis

### Prevalence of piroplasmosis asymptomatic carriers

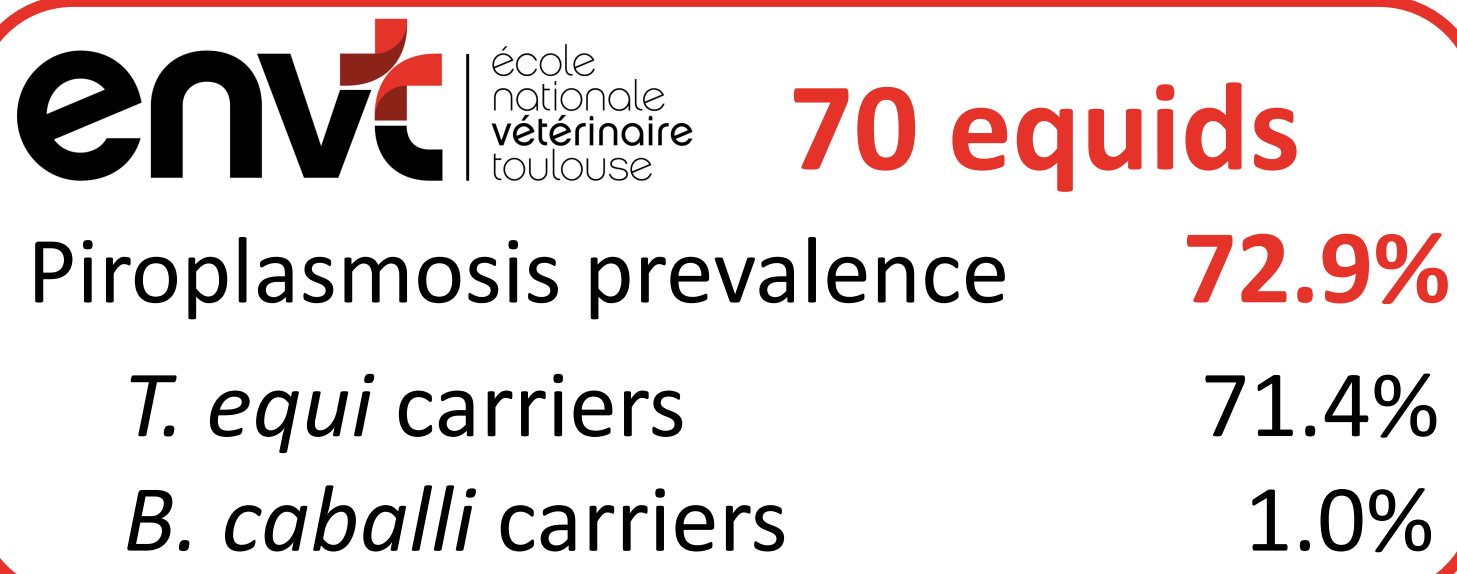


### High prevalence of *T. equi* carriers and low prevalence of *B. caballi* carriers

Abundance vs rarity of competent vectors?  
High vs low prevalence of infected ticks?  
Persistence vs elimination by the equids' immune system?

### A north to south carrier prevalence gradient

geographic distribution and abundance of competent tick vectors?



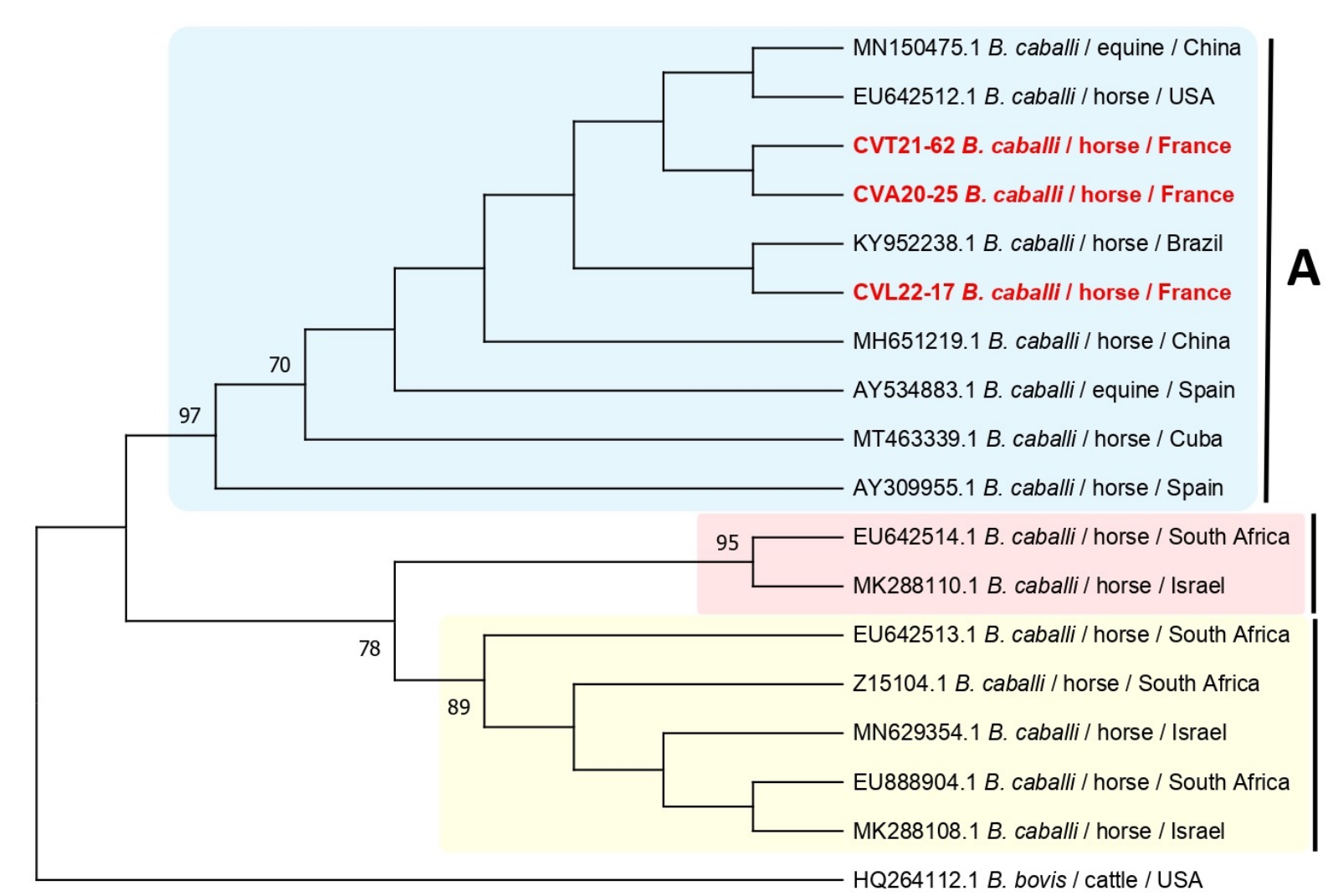
### Genotyping and phylogenetic analysis

All sequenced isolates of *B. caballi* from France belong to the genotype A

A great majority of *T. equi* isolates from France cluster within the genotype E, with a few isolates (4/194) belonging to the genotype A

#### *B. caballi*

18 partial 18S rRNA sequences (651-958 bp)

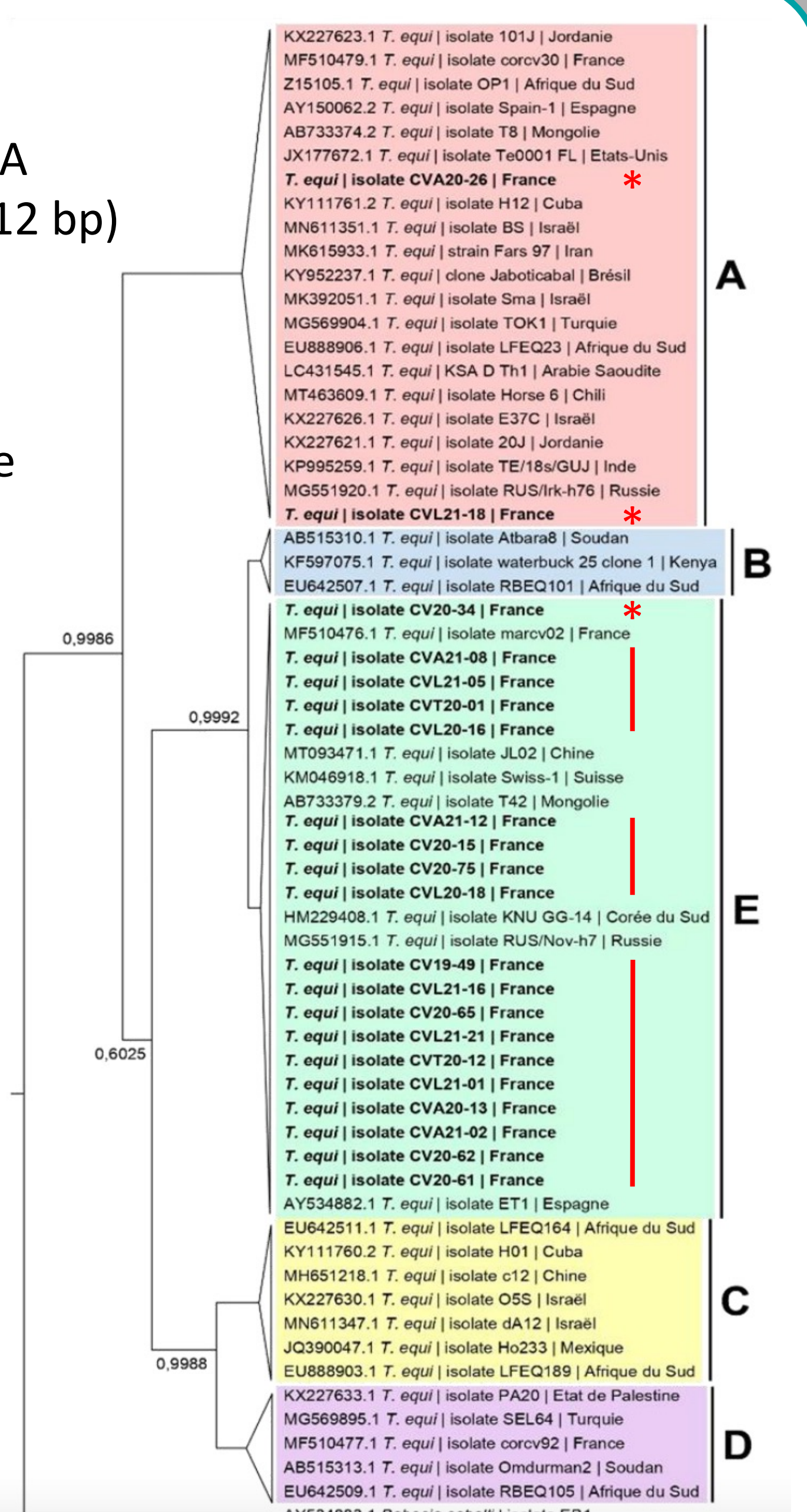


#### *T. equi*

194 partial 18S rRNA sequences (230-1412 bp)

17 from Paris  
50 from Nantes  
75 from Lyon  
52 from Toulouse

Genotyping  
98 % genotype E  
2% genotype A



### Conclusion - Discussion

This study confirms that equine piroplasmosis is endemic in France with an increasing carrier prevalence gradient, from north to south

Link with competent vector species, their abundance and/or geographical distribution?

For each species, most isolates belong to a single genotype (*B. caballi*) or to a dominant genotype (*T. equi*) regardless of their geographical origin.

#### Contact – Informations

Mails: [laurence.malandrin@oniris-nantes.fr](mailto:laurence.malandrin@oniris-nantes.fr)

[pirogotick@inrae.fr](mailto:pirogotick@inrae.fr)

Website: [www.pirogotick.fr](http://www.pirogotick.fr) (in french)



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