Paratuberculosis:

susceptibility and epidemiological role of Iberian ibex (*Capra pyrenaica*)

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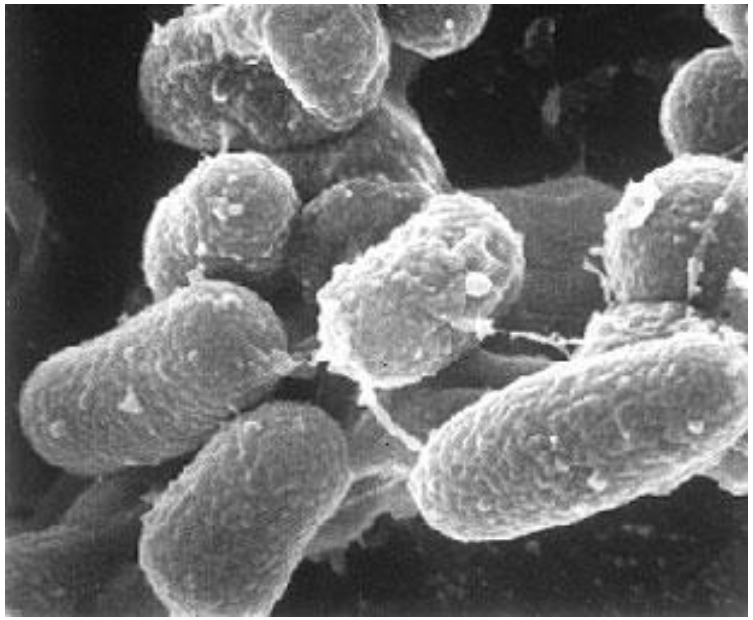
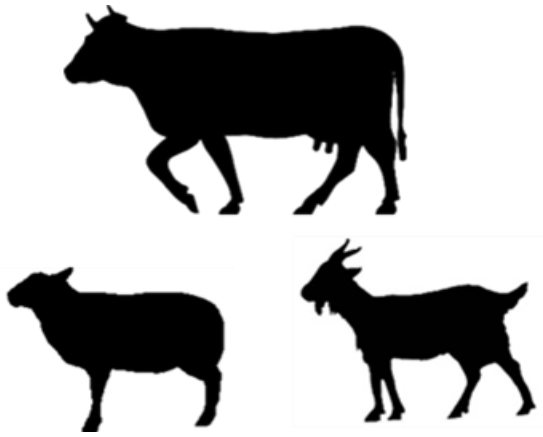
INTRODUCTION

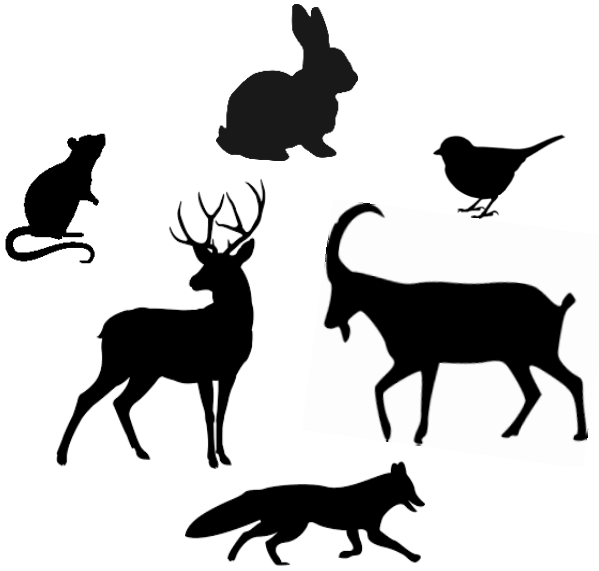
Paratuberculosis:

- Caused by *Mycobacterium avium* subsp. *paratuberculosis*
- Worldwide distribution
- Prevalence unknown in small ruminants



- Shared disease between domestic ruminants and wildlife
- OIE (World Organization for Animal Health)





INTRODUCTION

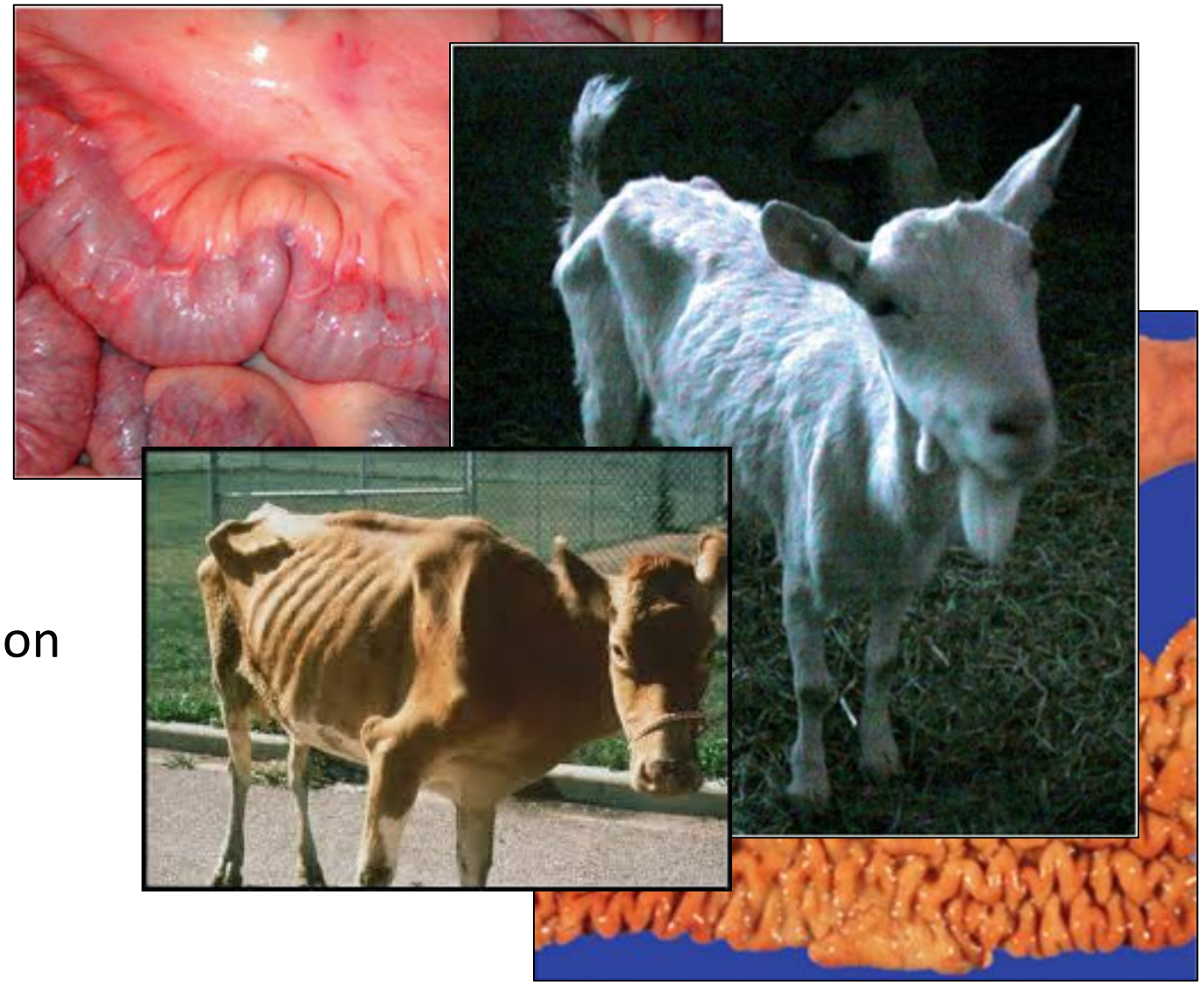
Infectious chronic enteritis

Loss of weight

Decrease of body condition

Diarrhoea

Decrease of fertility and milk production



Three different strains:

- Type I or "sheep"
- Type II or "cattle "
- Type III or "intermediate "

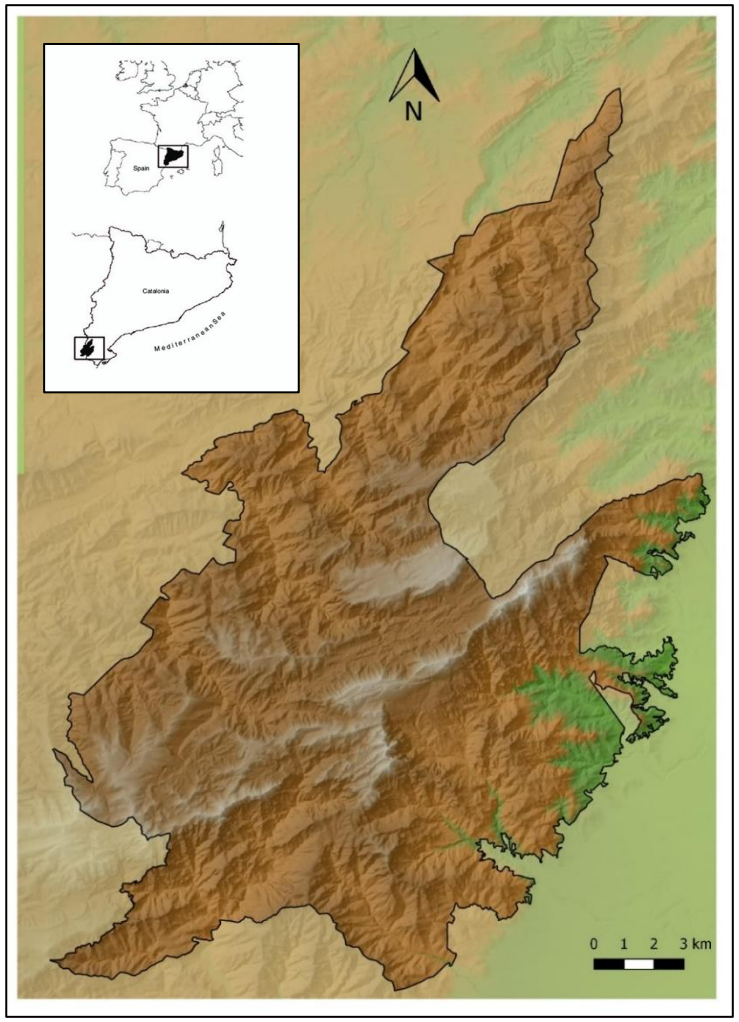
Mainly faecal-oral transmission

Contaminated pastures (livestock) → principal source of infection for wildlife.

OBJECTIVES

- Presence/absence of MAP in the Iberian ibex of Puertos de Tortosa y Beceite (PT&B) Natural Park
- Spatial and temporal distribution
- Potencial role of Iberian ibex in the epidemiology of MAP infection

MATERIALS AND METHODS



From 2007 to 2009

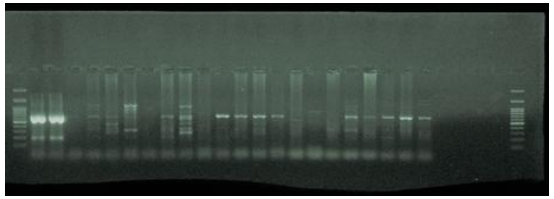
- 91 ileocecal valve samples (VIC)

From 2007 to 2017

- 346 serum samples

MATERIALS AND METODS

Ileocecal valve samples ⟶ Classic PCR
Sequencing of DNA



Serum samples ⟶ Indirect ELISA

Spatial and statistical study

Variables:
- Age
- Density
- Livestock
- Aggregation

RESULTS

- No lesions in VIC

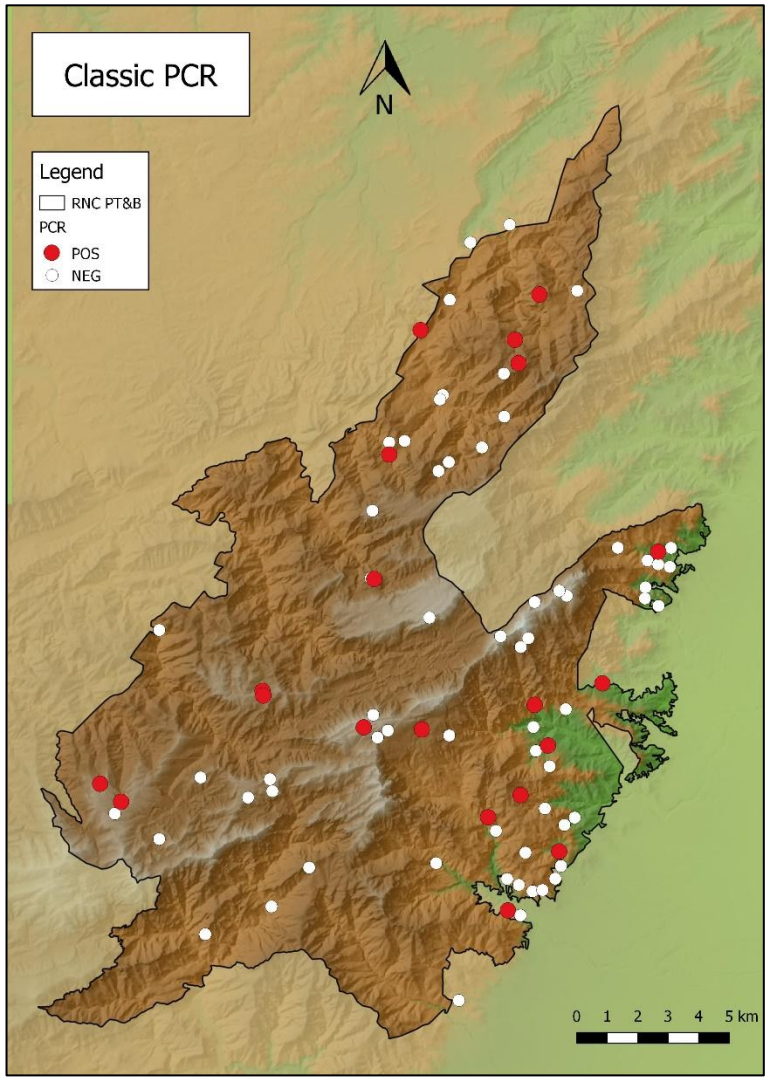
	ELISA indirect (n=346)	Classic PCR (n=91)
	% positives (+/analyzed; IC 95%)	% positives (+/analyzed; IC 95%)
2007	12,2 (5/41; 2,2 – 22,2)	6,3 (2/32; -2,2 – 14,2)
2008	4,4 (1/23; -4,0 – 12,8)	14,3 (2/14; -4,2 – 32,2)
2009	13,7 (7/51; 4,5 – 23,5)	35,6 (16/45; 21,6 – 49,6)
2010	15,8 (3/19; -0,6 – 32,2)	-
2011	2,9 (2/69; -1,1 – 6,9)	-
2012	6,4 (3/47; -0,6 – 13,4)	-
2013	14,3 (2/14; -0,1 – 42,9)	-
2014	25 (2/8; -5,0 – 55,0)	-
2015	7,9 (3/38; -0,7 – 16,5)	-
2016	13,3 (4/30; -2,8 – 5,4)	-
2017	0 (0/6; 0 – 0)	-
Total	9,3 (32/346; 6,2 – 12,2)	22,0 (20/91; 13,5 – 30,5)

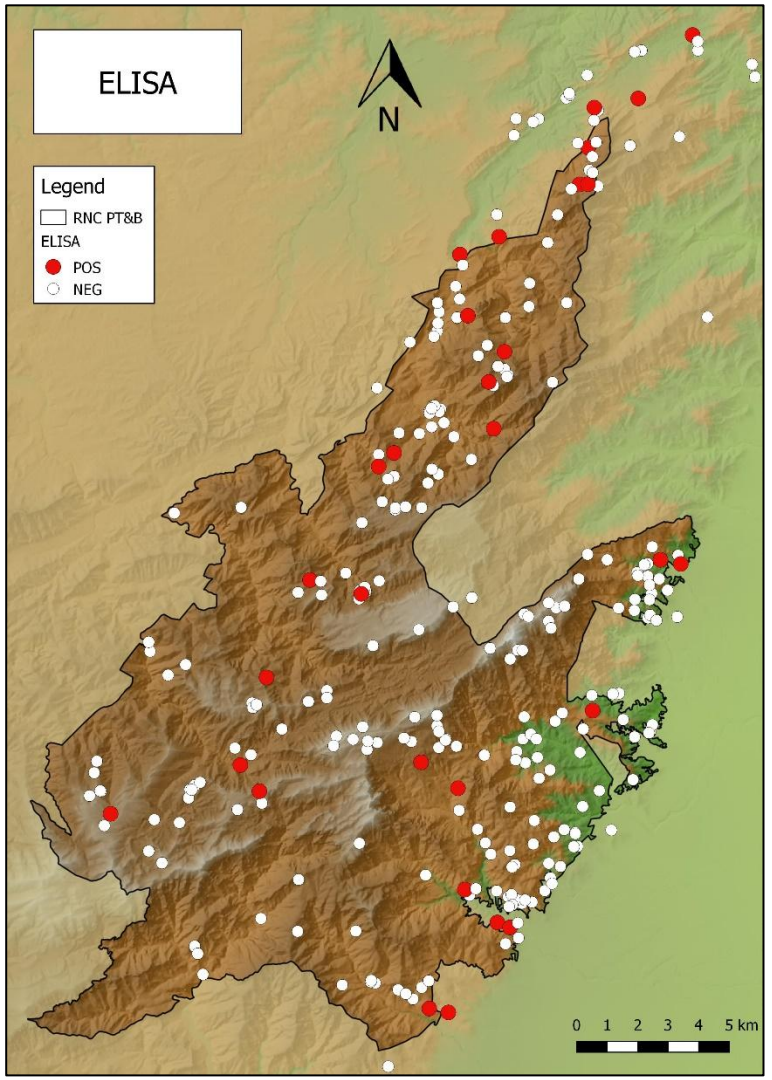
Low correlation between the 2 test

	N° of samples analyzed	% ELISA positives (n/total)	Confidence interval of ELISA (95%)	% PCR positives (n/total)	Confidence interval of PCR (95%)	ELISA (+) and PCR (+)
2007	32	15,6 (5/32)	3,0 – 28,2	6,3 (2/32)	-2,2 – 14,2	1
2008	14	7,1 (1/14)	-6,4 – 20,6	14,3 (2/14)	-4,2 – 32,2	0
2009	45	13,3 (6/45)	3,4 – 23,2	35,6 (16/45)	21,6 – 49,6	3
Total	91	13,2 (12/91)	6,2 – 20,2	22,0 (20/91)	13,5 – 30,5	4

Sequencing of DNA: 99-100% homology with the IS900 insertion sequence.

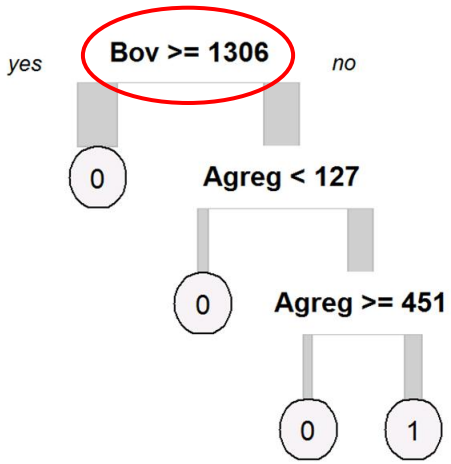
No spatial pattern.



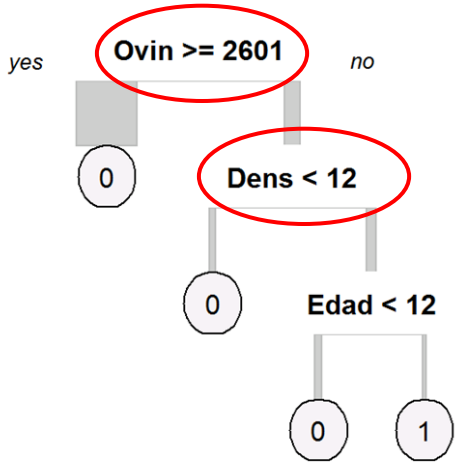


RESULTS

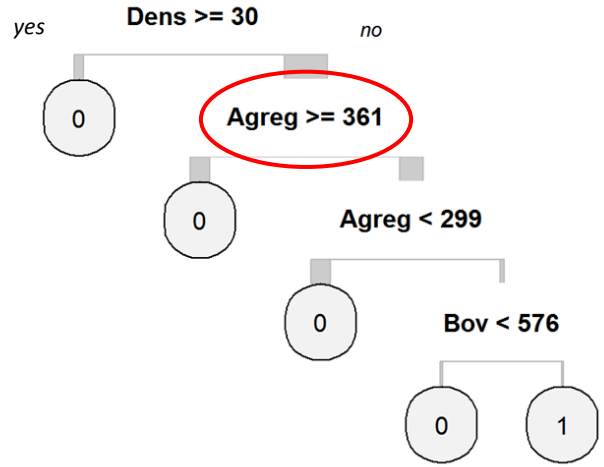
PCR (CT)



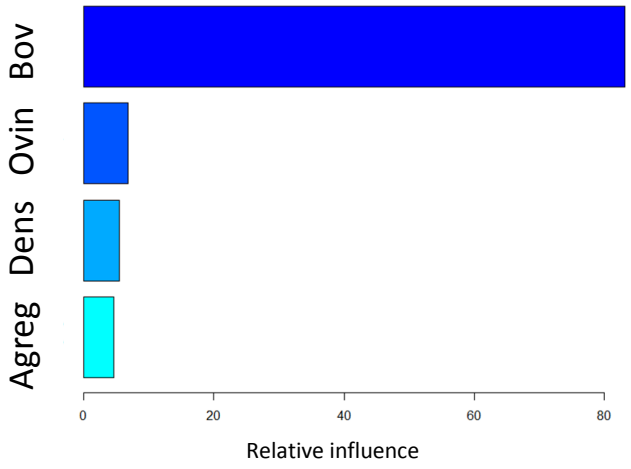
ELISA (CT)



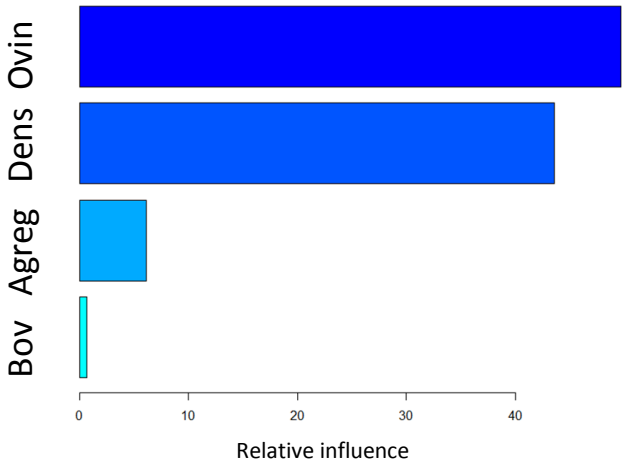
PCR + ELISA (CT)



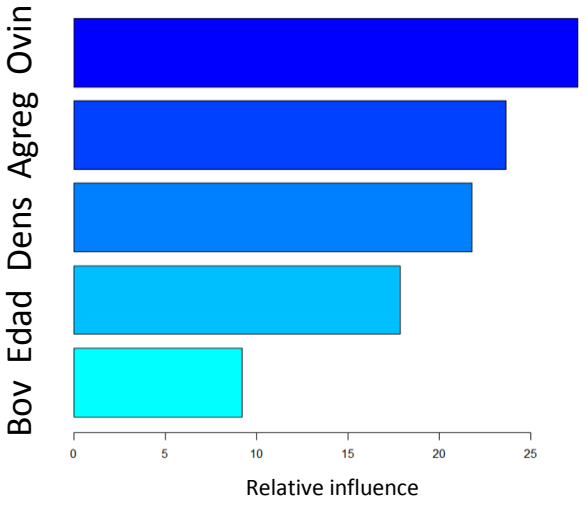
PCR (BRT)



ELISA (BRT)



PCR + ELISA (BRT)



DISCUSSION

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- Preliminary statistical analysis suggested the role of livestock as source of infection
- PTB present in livestock, but no clinical cases in Iberian ibex

CONCLUSIONS

→ MAP is present in the Iberian Ibex of the study area

→ MAP appears to be endemic in the Iberian Ibex populations

→ MAP excretion by Iberian Ibex unlikely to be significant

→ Further research needed to confirm the poor role of Iberian ibex in the epidemiology of PTB


Thanks for your attention