The background features a light pink pig in profile, facing left. Above the pig's head is a small blue vial and a syringe with a needle. Several red, spiky virus particles are scattered around the pig, some appearing to be on its body. The overall theme is veterinary medicine and virology.

IMPACT ON IMMUNITY AND PROTECTION AFTER ADMINISTRATION OF INACTIVATED VACCINES AGAINST PORCINE REPRODUCTIVE AND RESPIRATORY SYNDROME VIRUS

Veterinary master thesis 22/23
Mette Kryhlmand

02-11-2023

The structure of the Master thesis

Systematic review

- Inclusion of **16 studies** (2003-2022)
- **Commercial** PRRSV vaccines and PRRSV **autovaccines** (inactivated)
- Immunology: **ELISA S/P ratio, NA titer, IFN- γ ELISpot** and **viraemia** (serum)

Cohorte study

- Inclusion of four danish **sow herds**
- Evaluation of two inactivated PRRSV vaccines (**Progressis[®]Vet** and **Suivac[®]PRRS-IN**)
- **Prime-boost** (MLV + inactivated vaccine) vaccination programme

Cohorte study in four sow herds

Herd	PRRSV status	MLV in quarantine	INV boost	Animals included
Herd1	PRRS			Boost vaccinated
Herd2	PRRS PRRS			
Herd3	PRRS			
Herd4	PRRS PRRS			

Laboratory analysis

Two hypotheses:

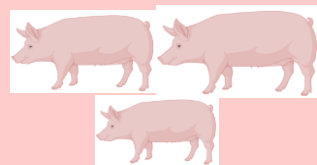
- 1) At least 96% of the boost-vaccinated gilts and sows will reach a seropositive status day 35
- 2) The boost-vaccinated gilts and sows will develop a higher NA titer and T-cell response compared to the situation BEFORE boost vaccination

NA (S/P ratio)
per herd)

er)
per herd)

spot (spots/10³)
per herd)

Boost vaccination + blood sample 1

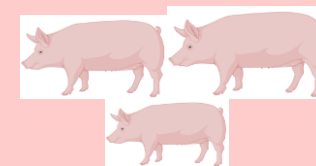


Dag 60-70 i
drægtighed

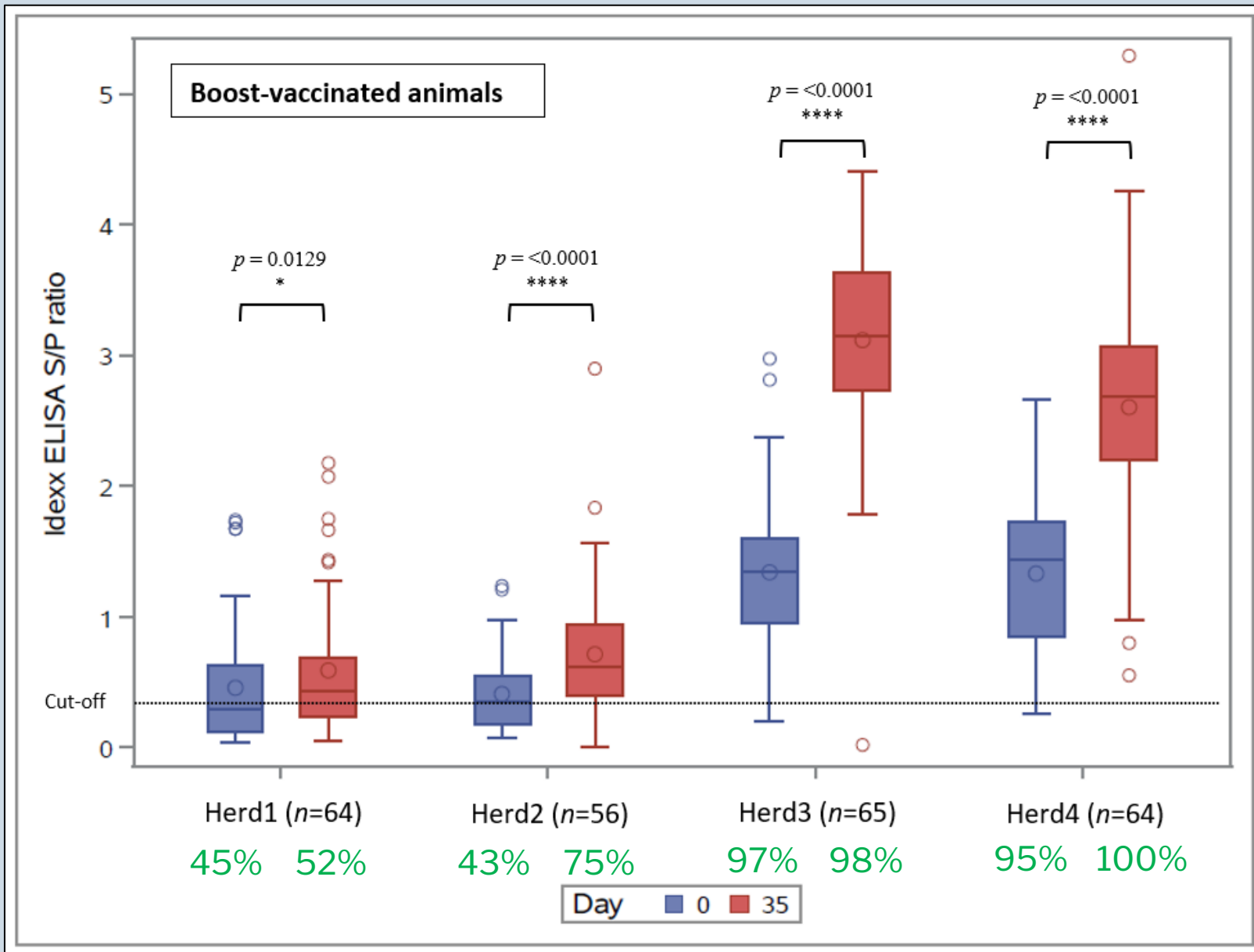
5 weeks



Blood sample 2



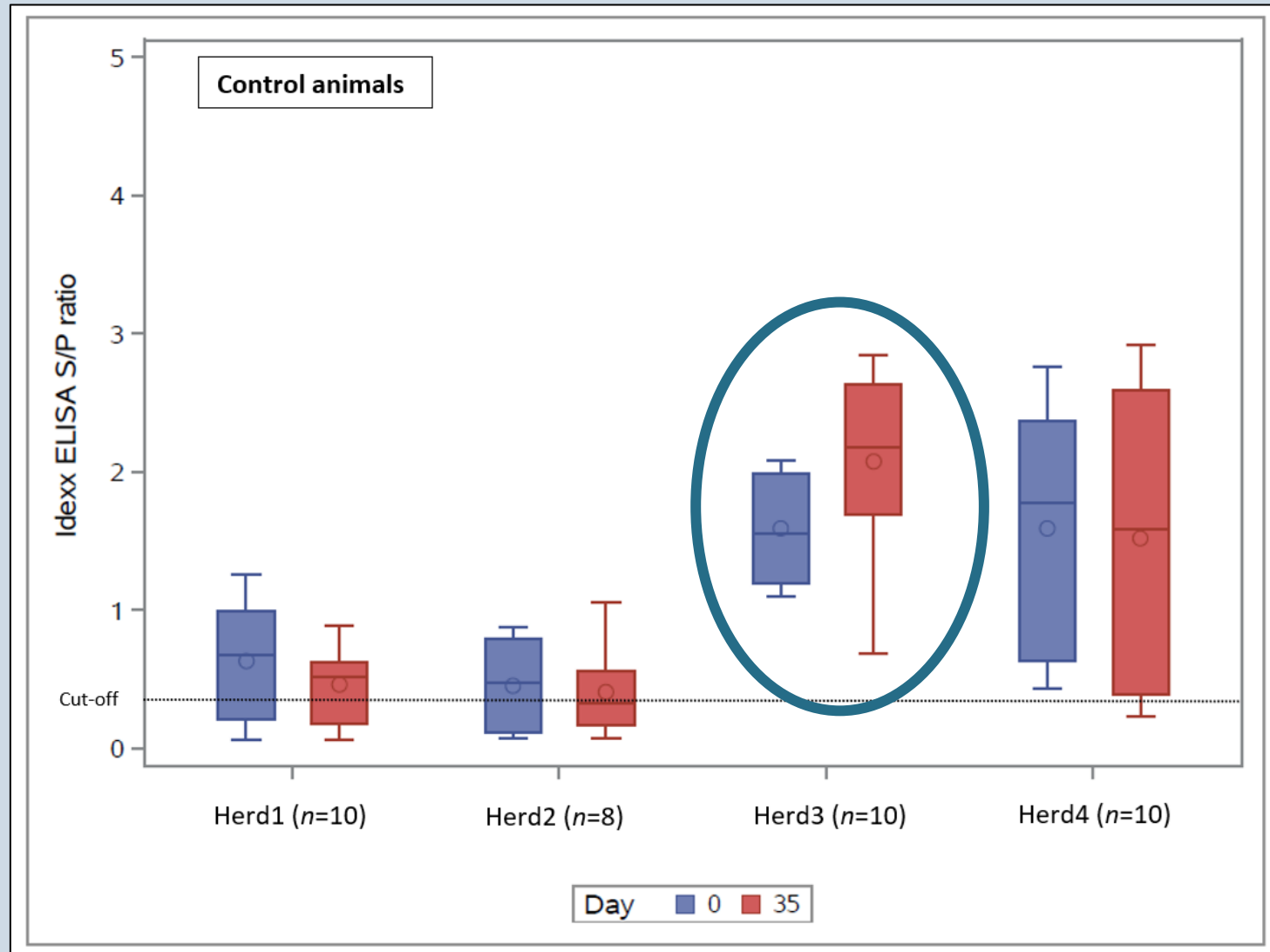
Idexx ELISA results



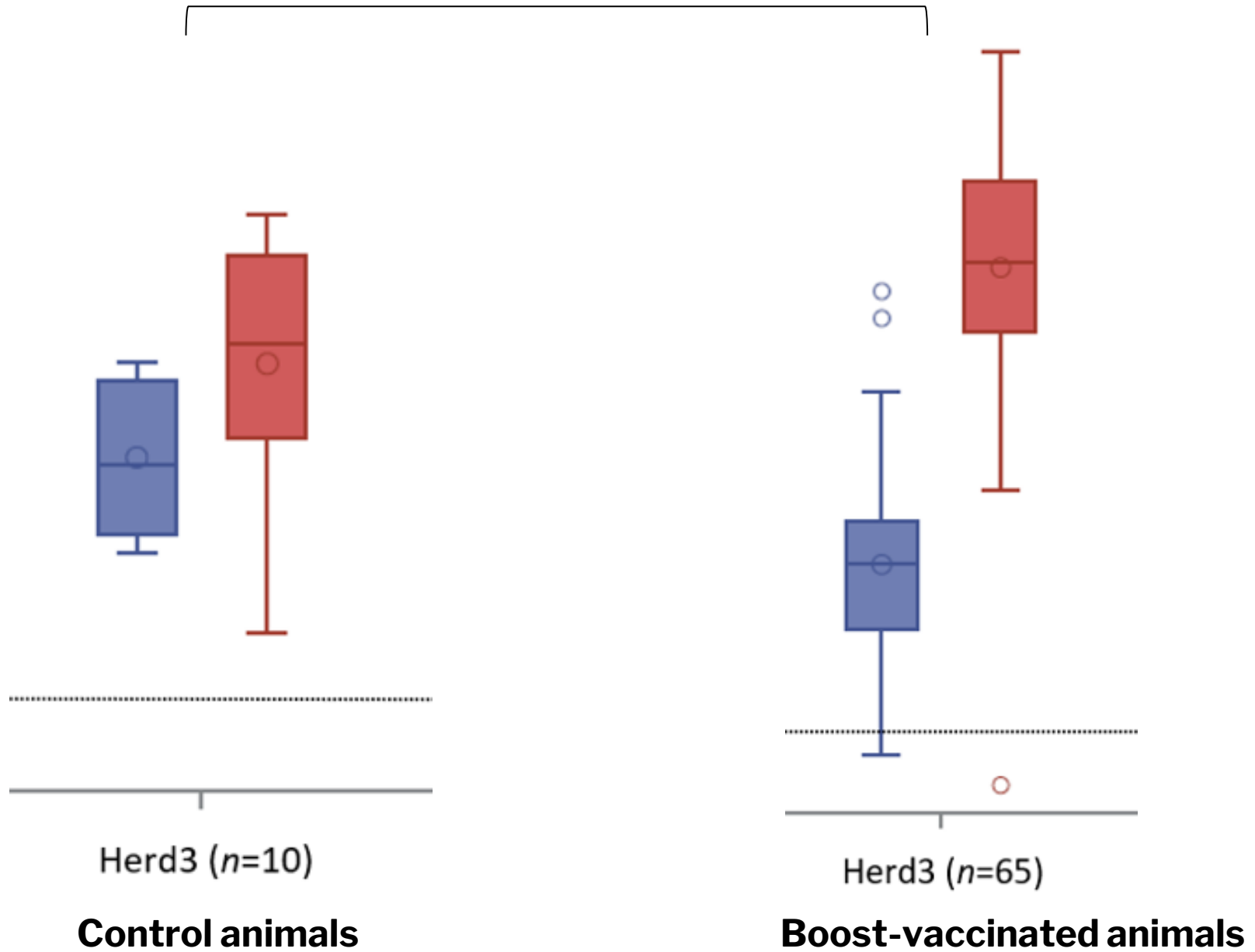
- Highest increase in Herd3
- Lowest increase in Herd1
- Our 1) hypothesis was confirmed in Herd4

Significant ($p < 0.05$) increase in ELISA antibodies in all herds!

Control animals – affected by natural PRRSV circulation?



$p < 0.0001$



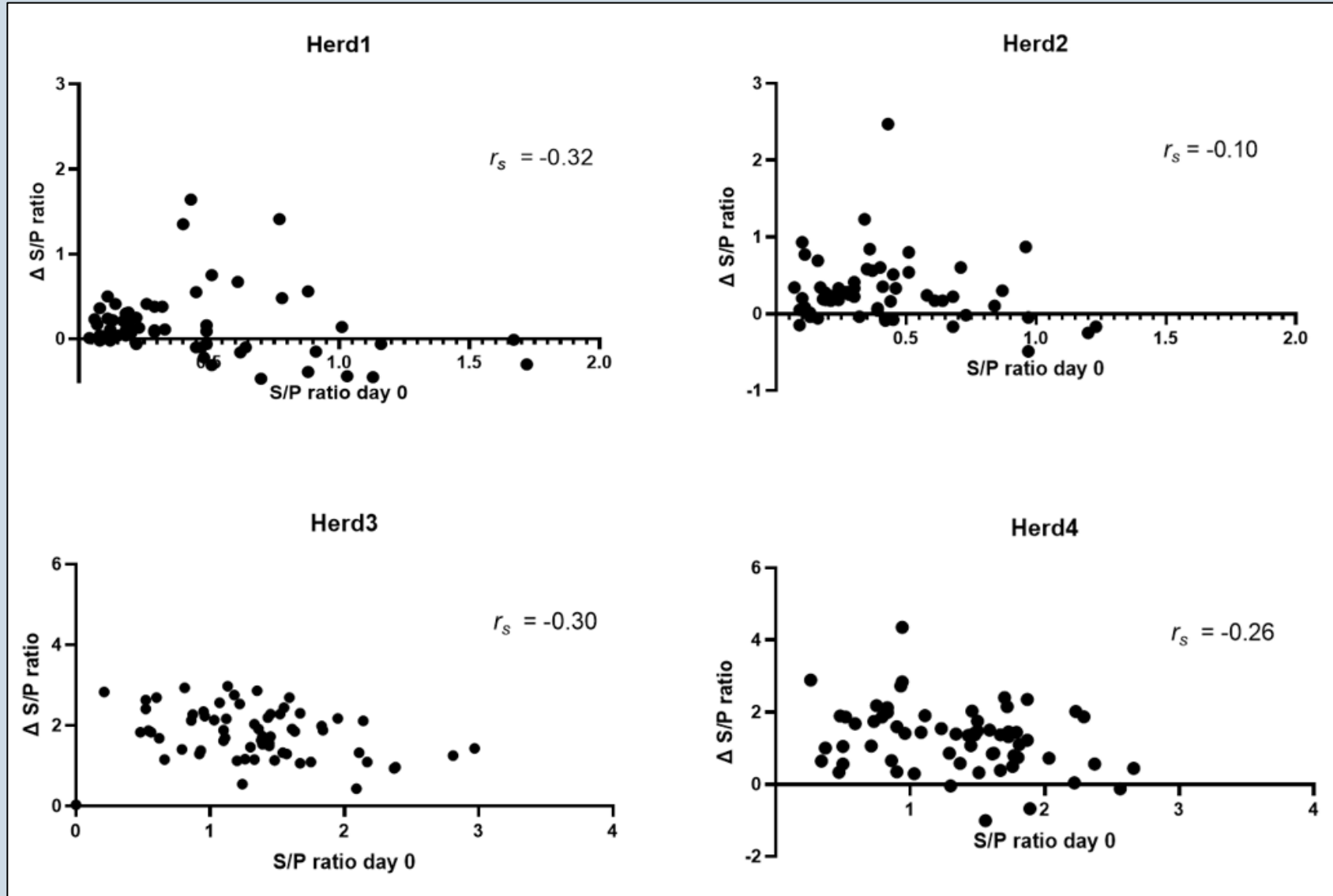
Herd3 (n=10)

Control animals

Herd3 (n=65)

Boost-vaccinated animals

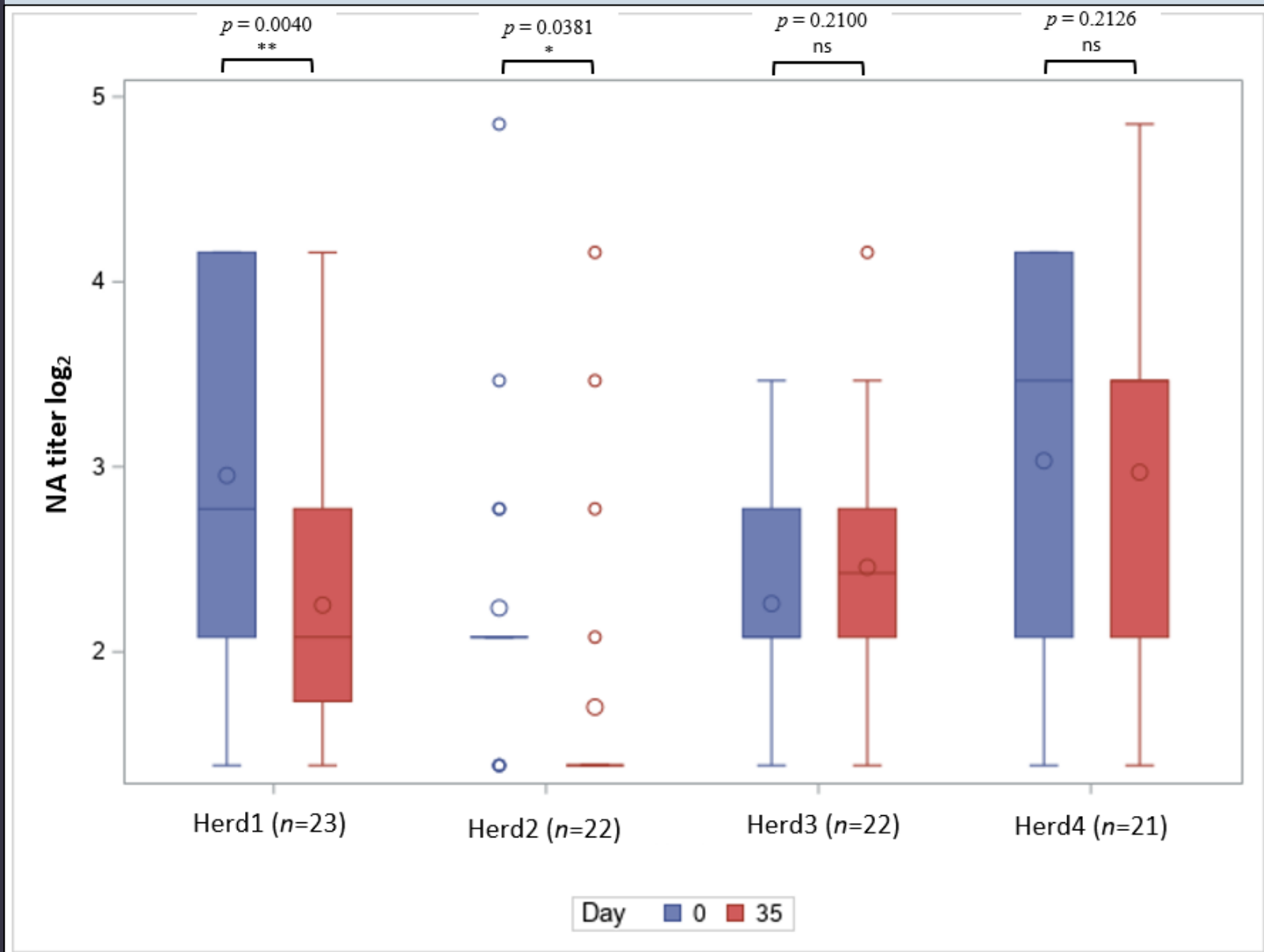
Is there any correlation between ELISA antibody level BEFORE boost vaccination and the boost potential?



A weak negative correlation:

The higher ELISA S/P ratio BEFORE boost vaccination, the lower increase in the S/P ratio AFTER boost vaccination.

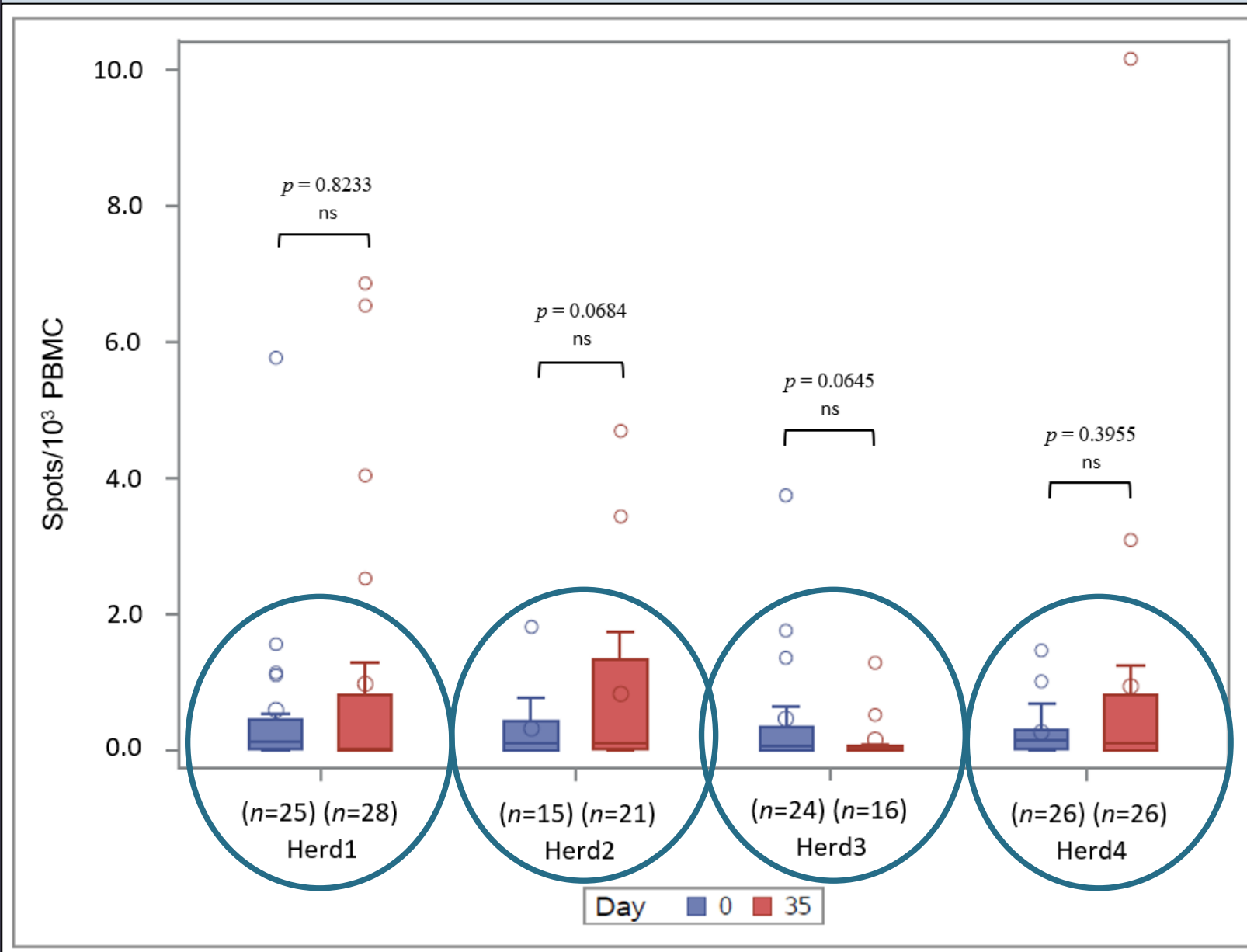
SNT results



- Herd1 and Herd2:
Decreasing significantly in NA titer day 0 to 35
- only a few animals with an increase
- Herd3 and Herd4:
No significant difference day 0 and 35
- 8 and 5 animals had an increase

ELISpot results

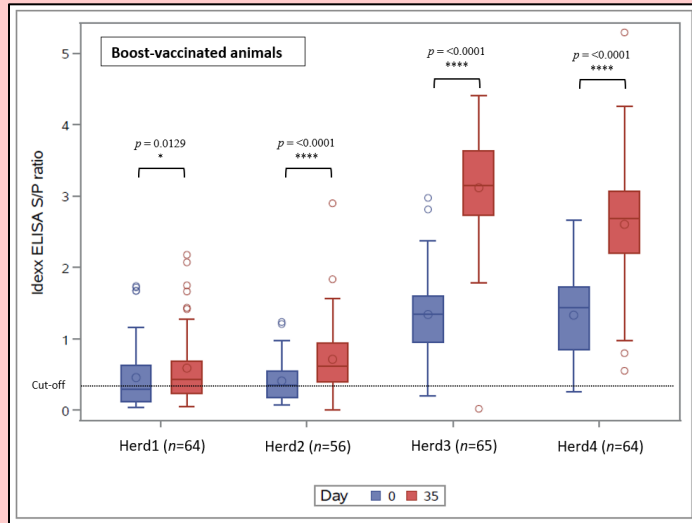
- GREAT variation in ELISpot within the same herd
- No significant difference in any of the herds – however, a strong tendency in Herd2 and Herd3



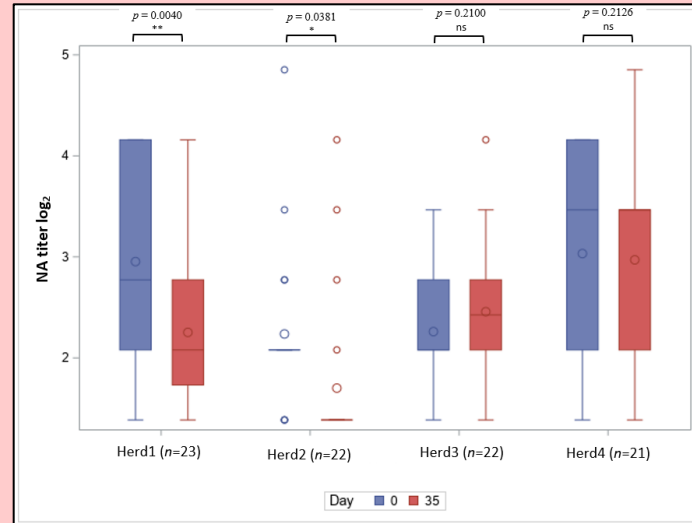
How is the correlation between all three tests?

The short answer → very poor in this study

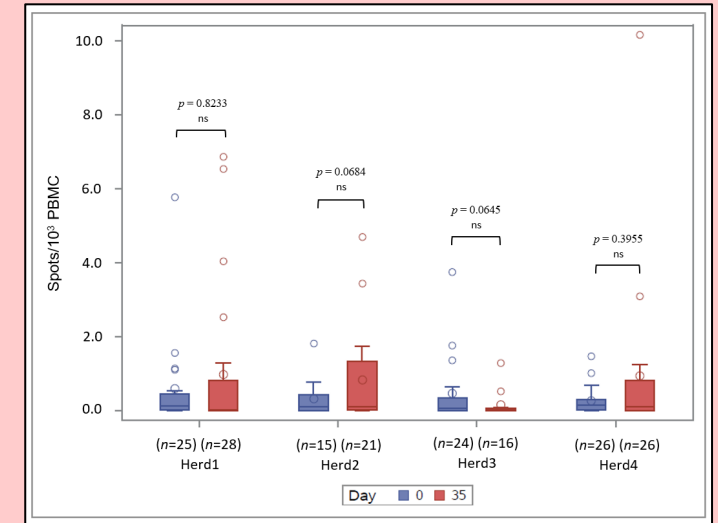
Idexx ELISA



NA titer



IFN-γ ELISpot

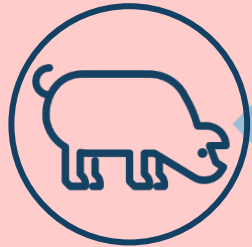


	An increase in all tests	A decrease in all tests	Varying results
Herd1	0	5	19
Herd2	2	0	20
Herd3	0	0	23
Herd4	1	0	23

Change from day 0 to 35



Summary of conclusions



Boost vaccination with Suivac[®]PRRS-IN and Progressis[®]Vet resulted in a **significant increase in ELISA antibodies** in all four sow herds



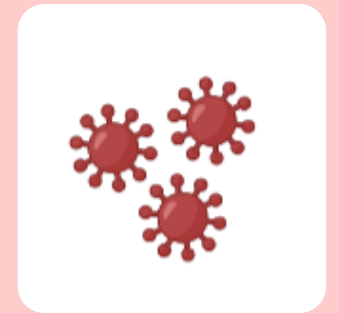
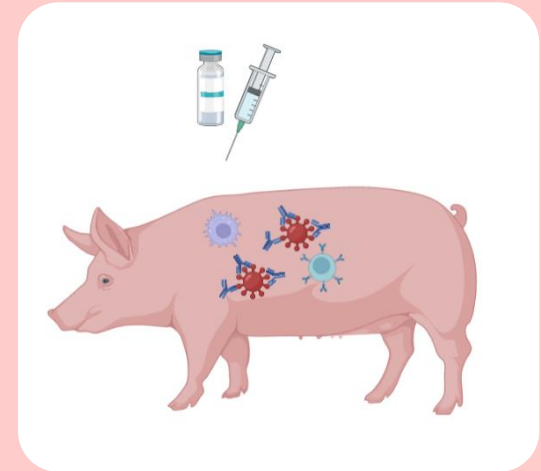
Low-seropositive gilts and sows day 0 had the highest boost-potential in ELISA antibodies



Boost vaccination of gilts and sows **did not result in a significant increased NA titer or IFN- γ T-cell response** day 35 in any of the sow herds



No good correlation between Idexx ELISA, SNT and/or ELISpot after boost vaccination was demonstrated in this study



A woman with blonde hair tied back, wearing a light-colored t-shirt and pants, is crouching on a wooden deck. She is looking down at a dog that is lying on its back on the deck. In the background, there are several metal cages, suggesting a kennel or a veterinary facility. The image is overlaid with a dark blue semi-transparent layer, and the text is centered in white. The text is framed by a white L-shaped graphic element in the top-left and bottom-right corners.

TAK FOR JERES
OPMÆRKSOMHED