

Aplicaciones del Diagnóstico Serológico y Molecular del Circovirus Porcino Tipo 2

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PATROCINADO POR:





Influencia en la efectividad de la vacunación

- La habilidad de los lechones para dar una respuesta immune
 - Está presente a partir de los 14 días de vida
 - Influenciada por los Anticuerpos Maternos
- Vacunar correctamente
- Inmunidad pasiva calostrual

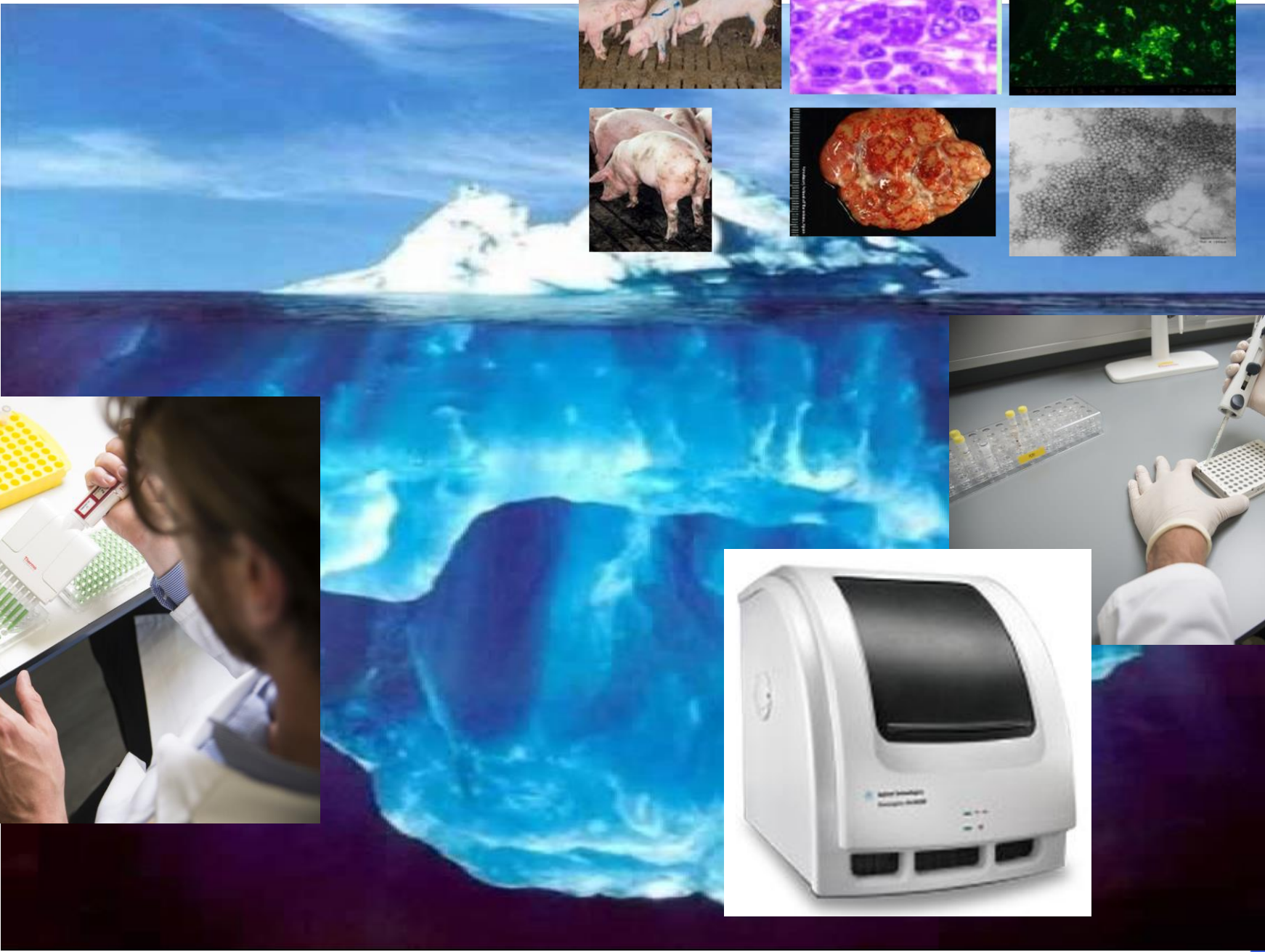


Diferentes vacunas, diferentes estrategias

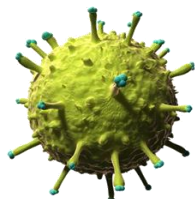
Tipos de vacunas:

- ORF2 Subunitarias
- PCV2 virus entero inactivado
- PCV1/2 Quimera





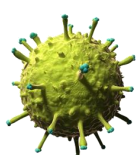
Diagnóstico Combinar ELISA y PCR



Accesible	Fácil	Estandarizado	Reproducible	Rápido
Control de Calidad		Cuantificable	Sensible	Específico



Diagnóstico Combinar ELISA y PCR



ELISA	qPCR	Interpretación
+	+	Viremia activa, presente por al menos 14 días. Inmunidad humoral activa.
+	—	No hay viremia. La exposición al virus generó una respuesta inmune humoral.
—	+	Infección temprana. El virus está siendo diseminado. Alto riesgo.

Diagnóstico

Diferentes kits, diferentes aplicaciones

ELISA indirecto a virus completo

PCV2 infecciones: +++

PCV2 AcM: +++

PCV2 vacunación: ++



Elegir el tipo de ELISA es crucial.

Cada vacuna tiene una respuesta específica (título, CV% y % positivos)

Diagnóstico

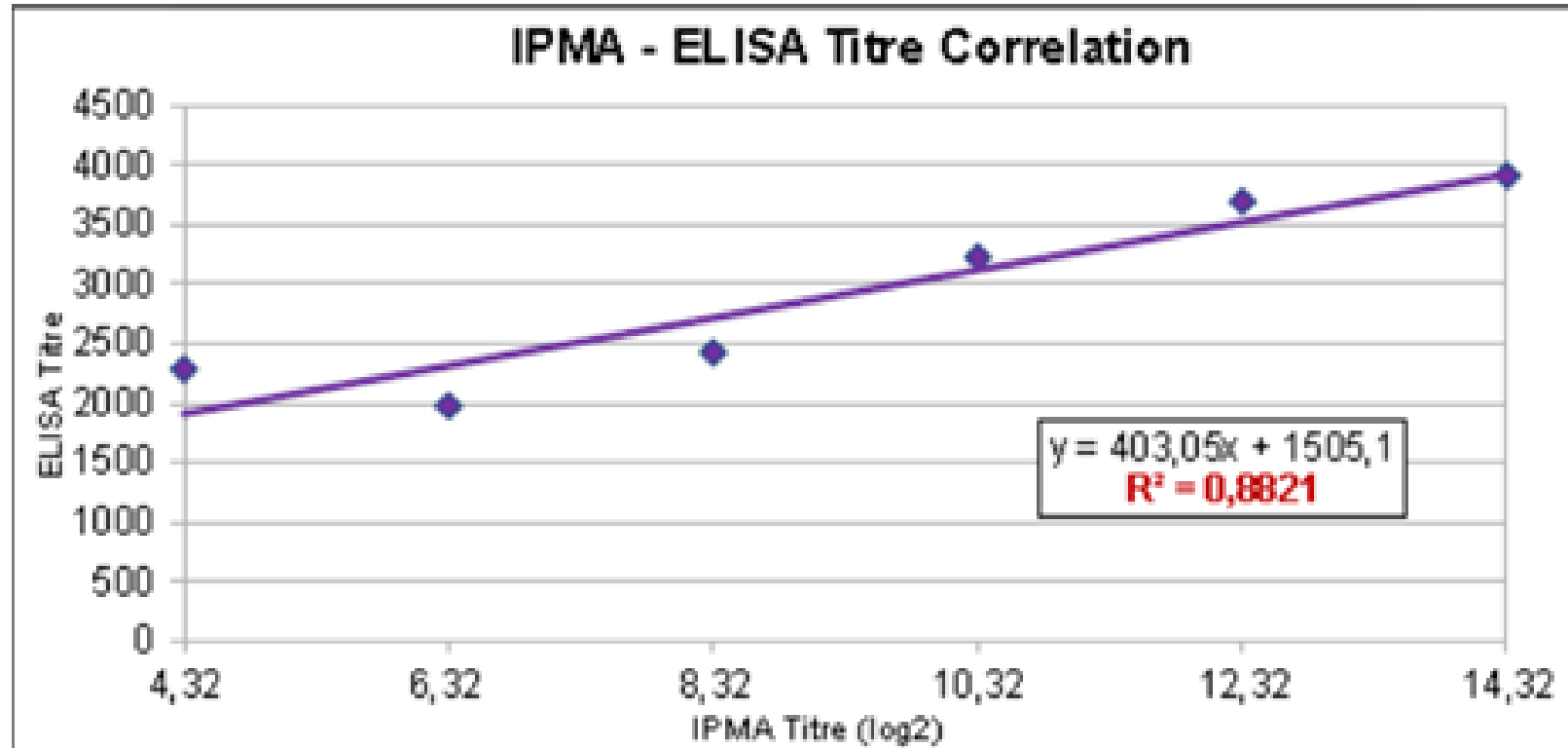
Diferentes kits, diferentes aplicaciones



COMPARISON OF AN IMMUNOPEROXIDASE MONOLAYER ASSAY AND A INDIRECT ELISA "PCV2 ELISA® SK105" (BIOCHEK®) TO DETECT ANTIBODIES AGAINST PORCINE CIRCOVIRUS TYPE 2

Excelente correlación con el Gold Standard (IPMA – Inmunoperoxidasa), y por lo tanto con la protección.

Permite estimar el momento de la infección

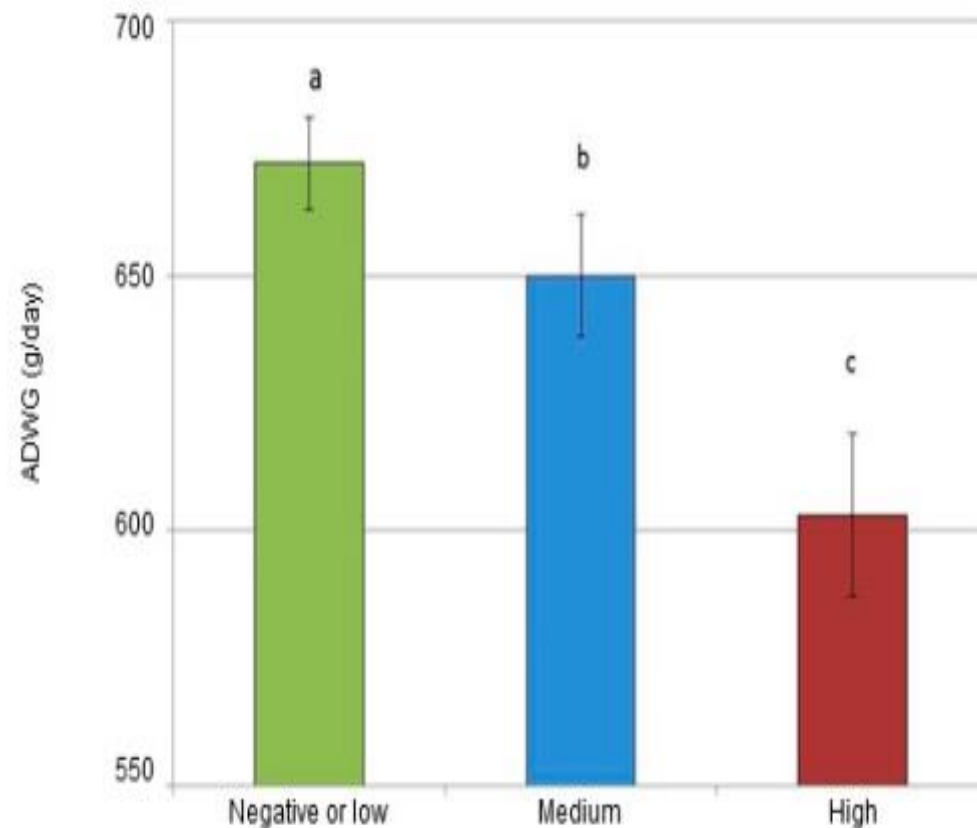


PCV2 viraemia, a load-dependent effect on average daily weight gain during the postweaning period

Sergio López SoriaJoaquim Segalés

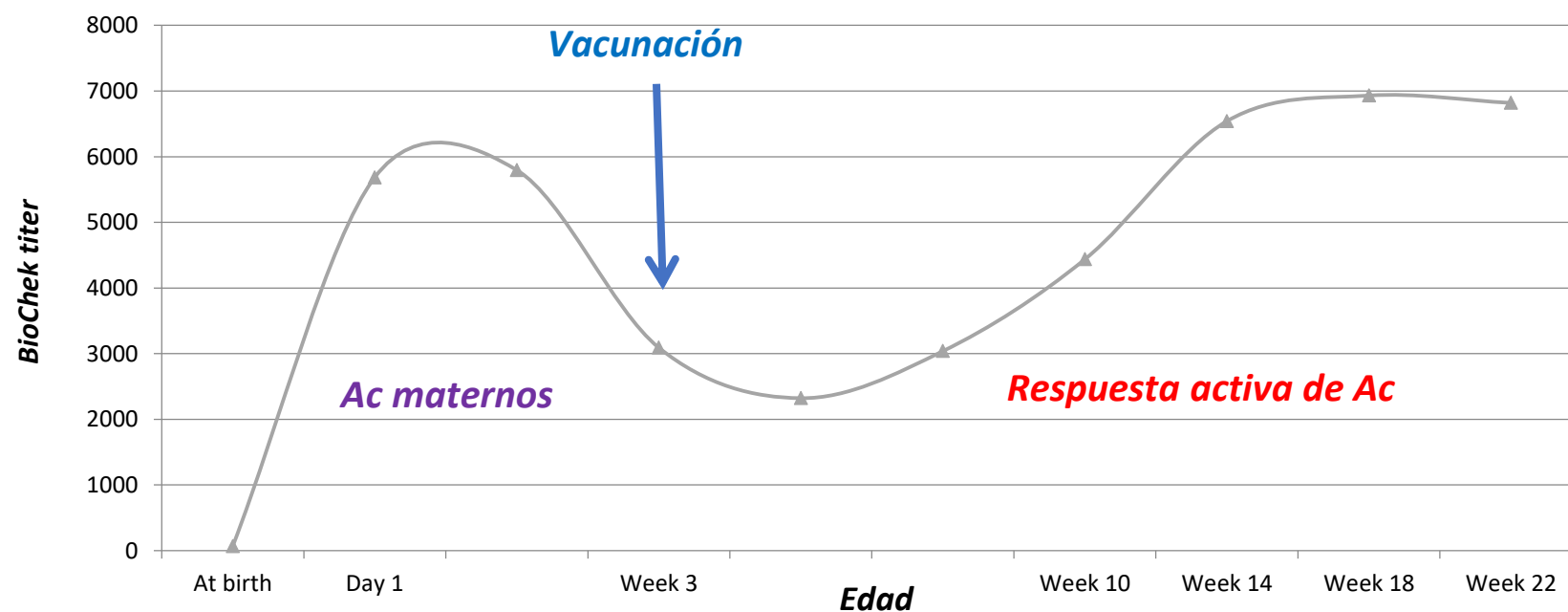


This scenario would imply a mean loss of 13.1 € and 7.5 €/pig at 21 weeks of age for pigs with “high” and “medium” serum PCV2 load, respectively, compared to those with “negative or low” load.

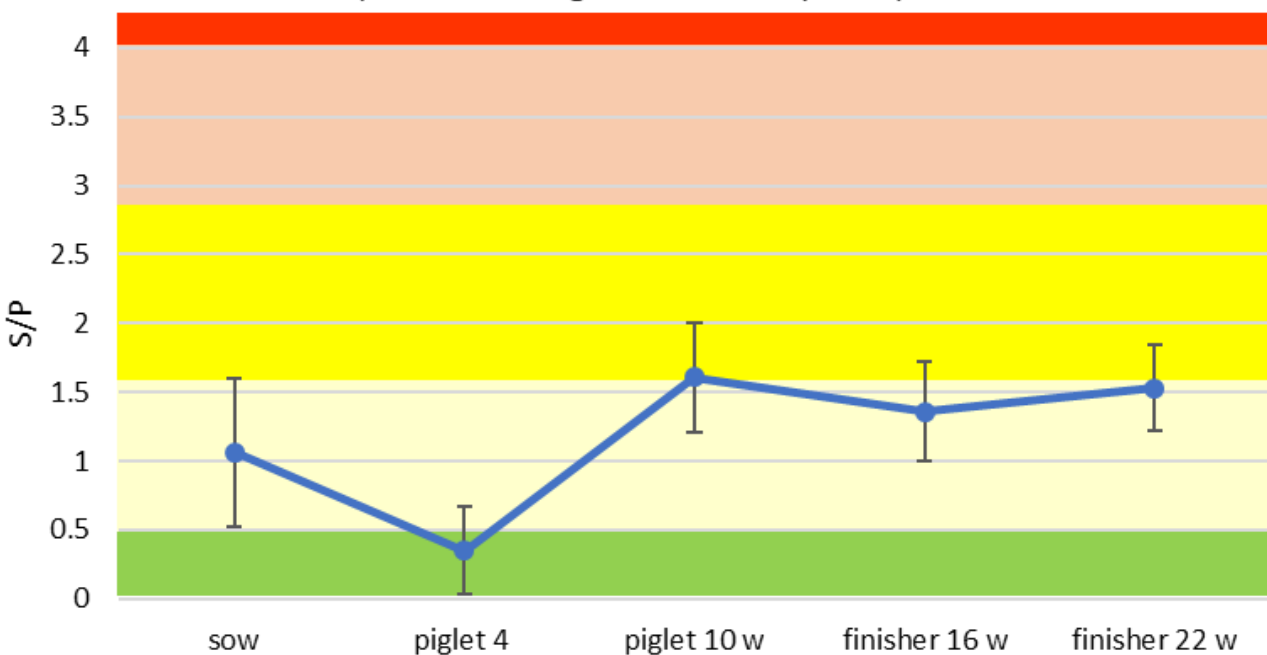


Diagnóstico

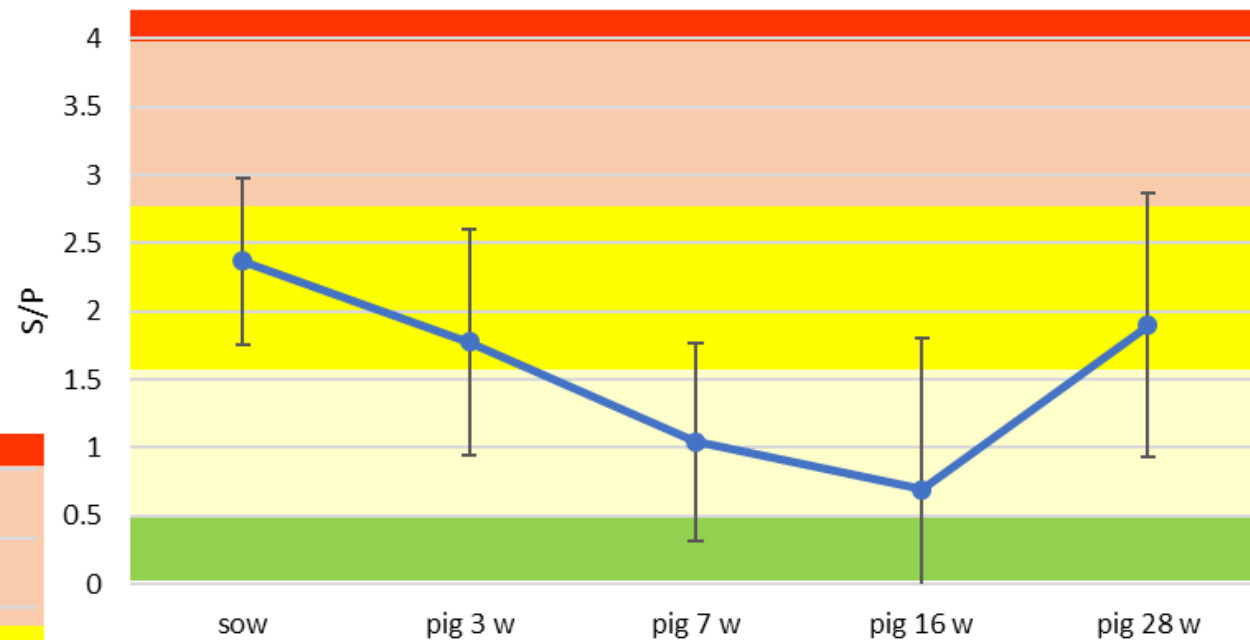
- PCV2 infecciones: +++ ➡ Presencia de la infección y el momento de la infección?
- PCV2 AcM: +++ ➡ Niveles de Ac M y momento correcto de la vacunación?
- PCV2 vacunación: ++ ➡ Los animales están siendo (bien) vacunados?



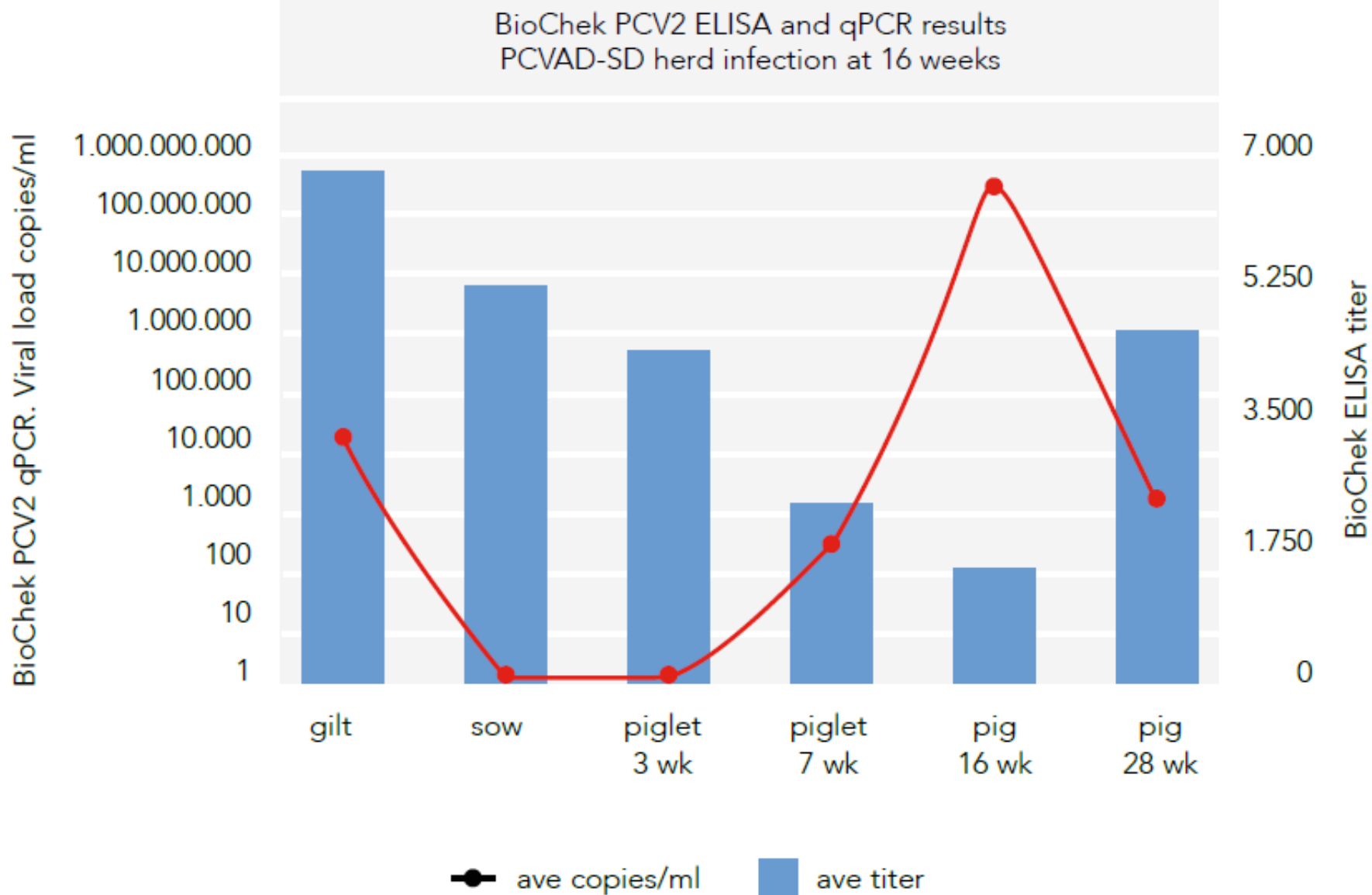
Monitor timing and effect PCV2 piglet vaccination at 3 w
(correct timing / uniform response)



monitoring timing and effect PCV2 piglet vaccination at 3 w
(vaccination to early / later infections)



Example report: Diagnosis PCVAD + infection moment



No vaccination		BioChek PCV2 ELISA (S/P and titer)		Vaccination	
No infection	Negative	< 0.5	≤ 1070	Negative	No infection
Infection*	Low	0.5	1071	Low	No Ab interference exp.
	Moderate	1	2300	Moderate	Possible Ab interference on vaccination
		1.5	3600		
	Reasonable	2	4900	Reasonable	Possible vaccination response
		2.5	6200		
	High	3	7600	High*	Vaccination response with antibody boosting due to field virus contact
		3.5	9,100		
		4	10,500		
	Very high	4.5	12,000	Very high*	
		> 4.5	> 12000		

* check for the clinical relevance: evt. PCVAD symptoms or poor technical results and do qPCR on relevant samples. Vaccinations reduce viraemia.

BioChek PCV2 DNA qPCR (load: copies/ml)			
Viral load:	Serum*	Tissues*	qualification:
Negative (LLOD)	≤ 50 copies/reaction	≤ 50 copies/reaction	No infection detected
Minimal	< 5 log10		No clinical relevance
Low	5 log10	5-6 log10	possible PCVAD-SI
Moderate	6 log10	≤ 7 log10	PCVAD-SI
High	≥ 6 log10	> 7 log10	PCVAD-SD

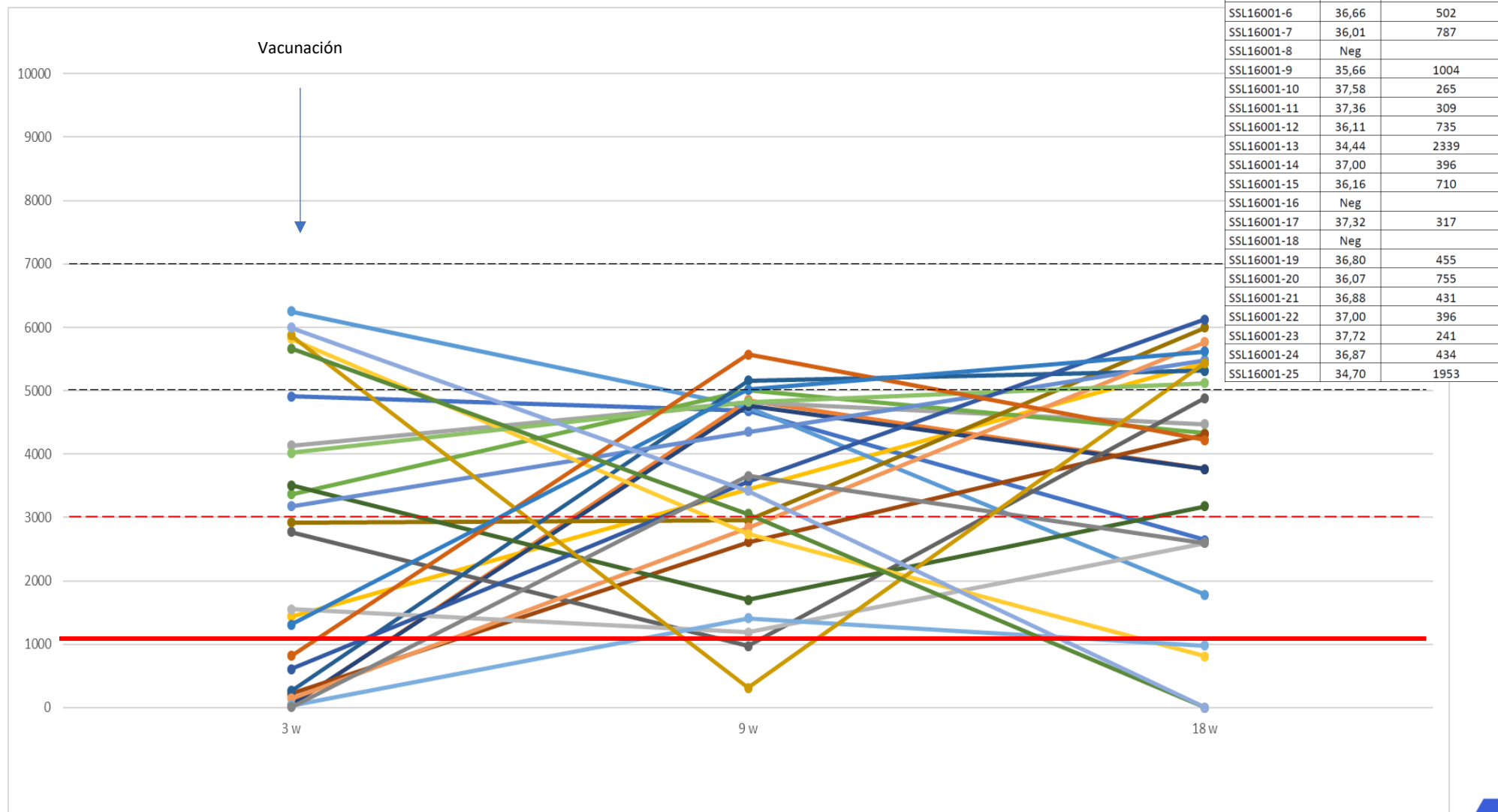
* via comparing test outcomes with DNA standards (Catalogue number: SP201)

Experiencias de Campo

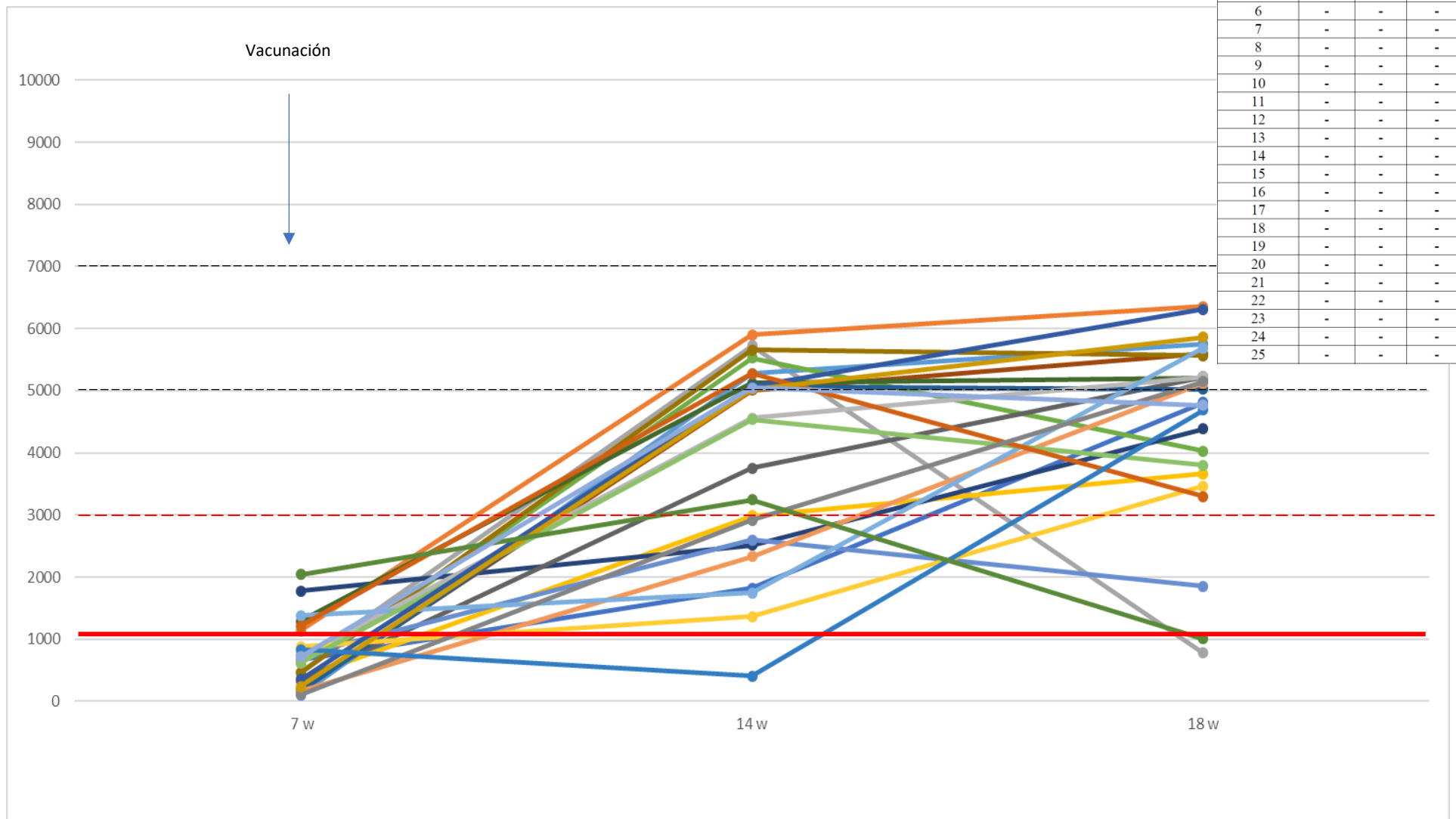
Vacuna C

- Vacuna Inactivada
- Altamente inmunogénica
- A la dosis regular de 2 ml se obtienen títulos de 5000- 6000 o más en madres, con bajos %CV
- En lechones hay interacción con AcM
 - Puede dar respuesta baja de 2000 – 3000
 - Si se vacuna a las 3 semanas, debemos ver aumento de título y disminución de %CV 3-4 semanas después

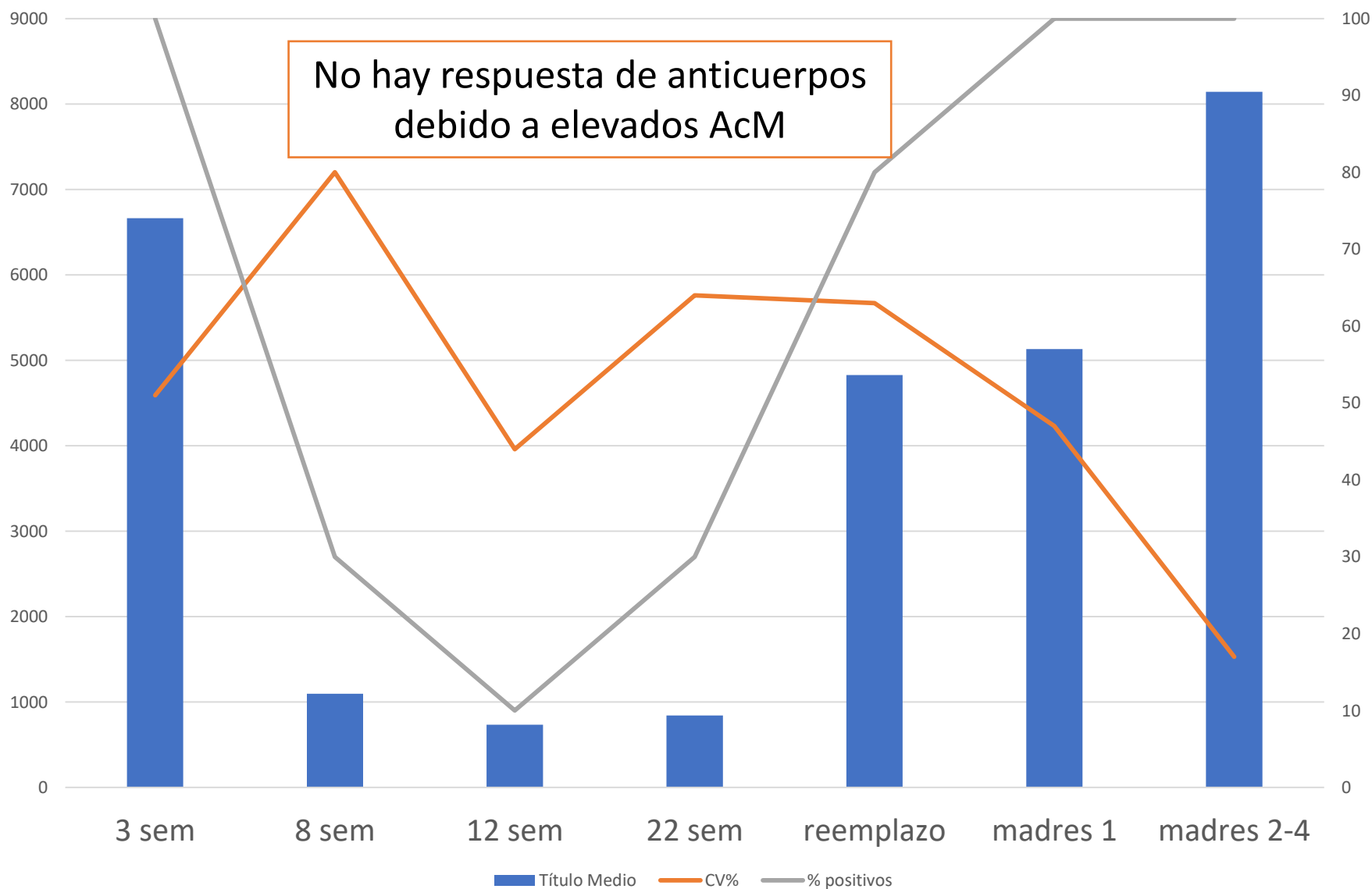
Vacuna C



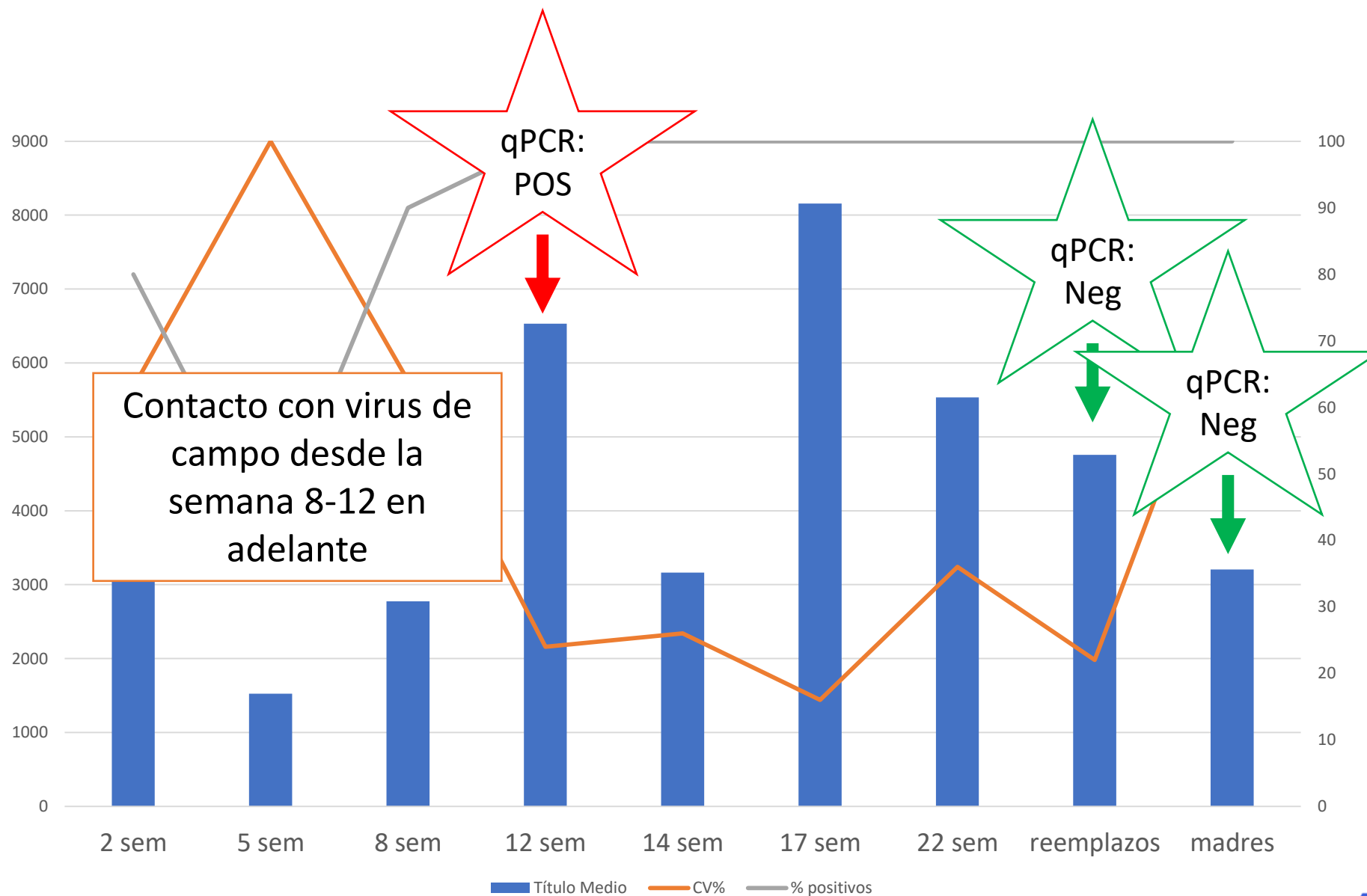
Vacuna C



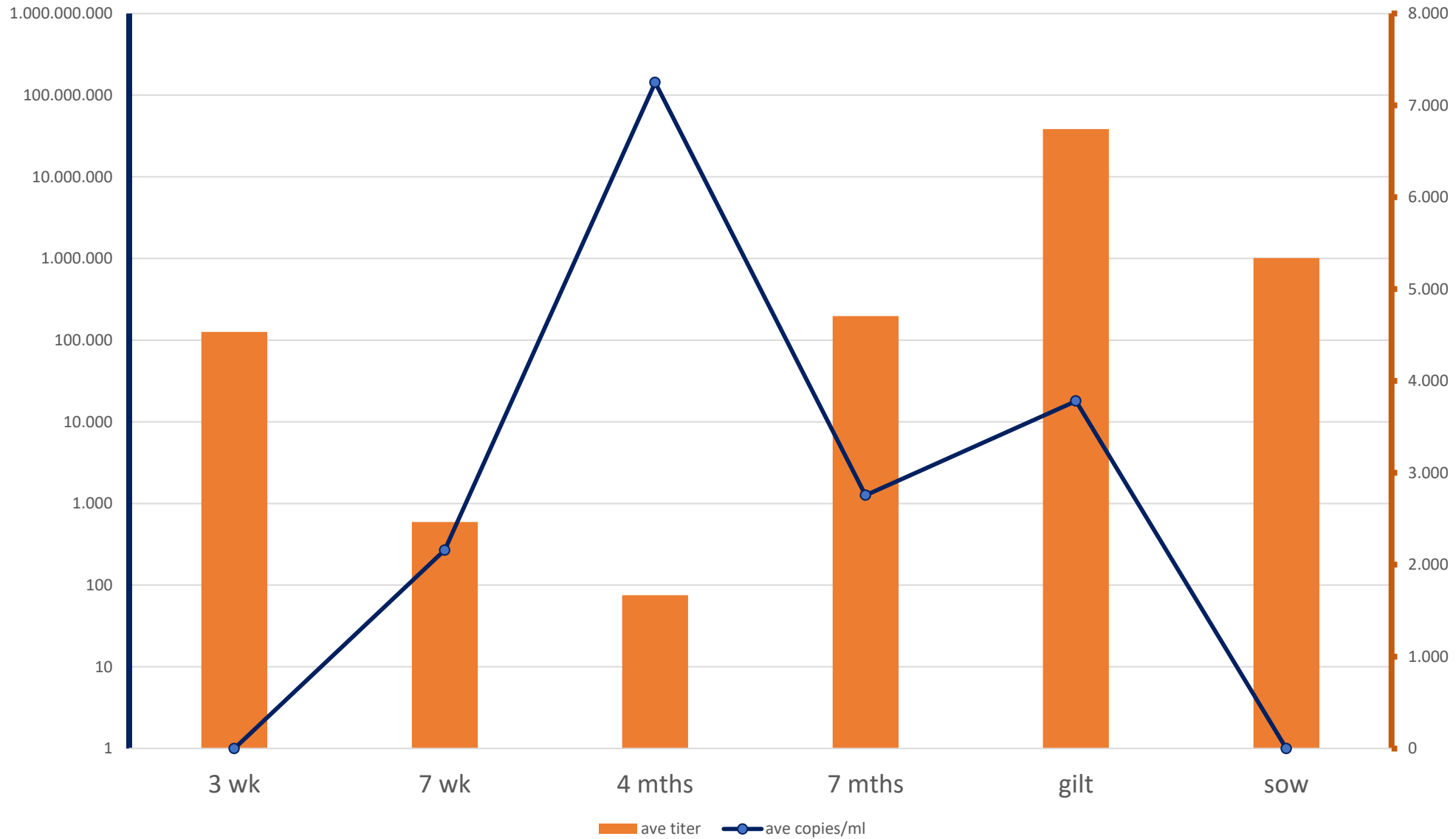
Vacuna C



Vacuna C



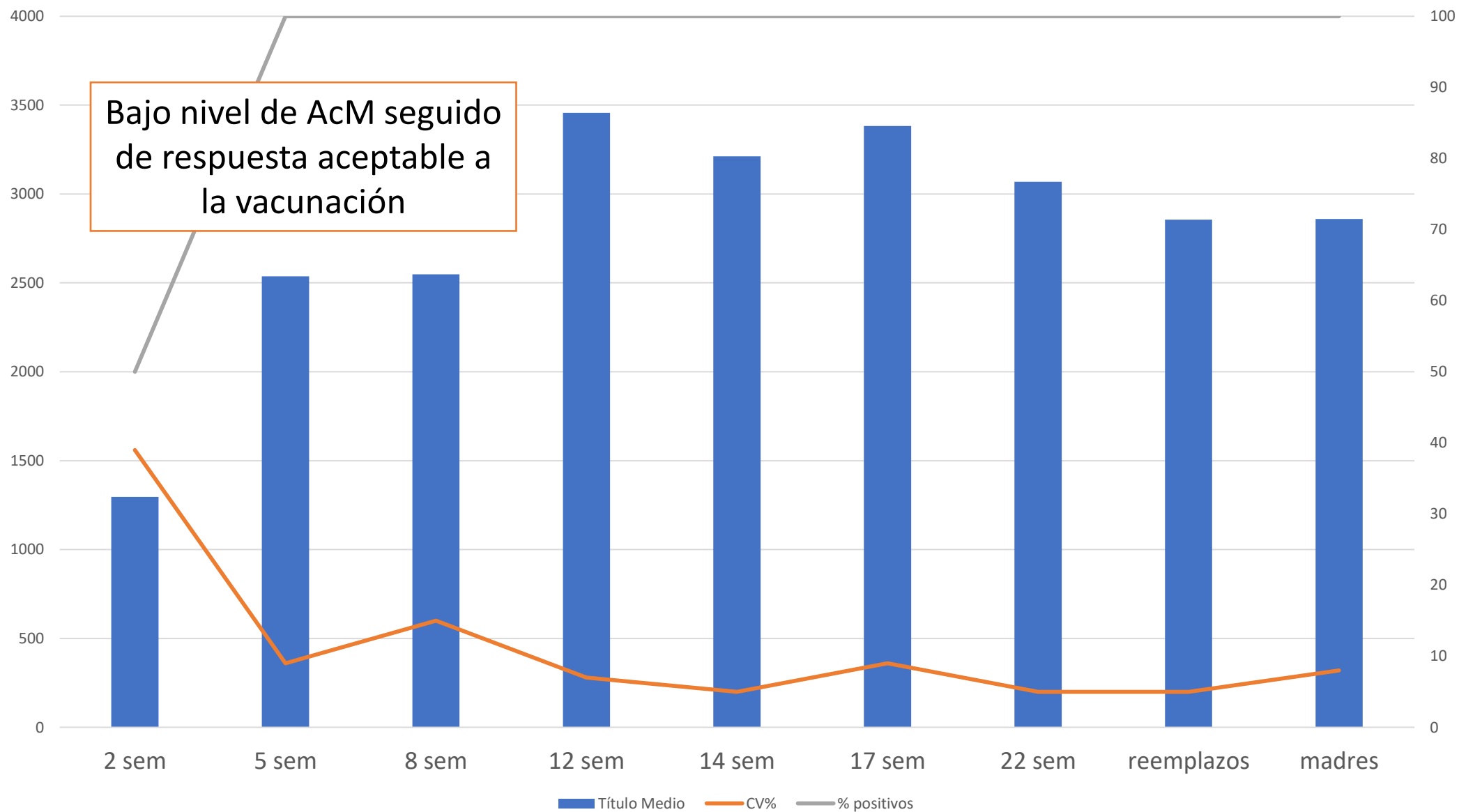
Vacuna C



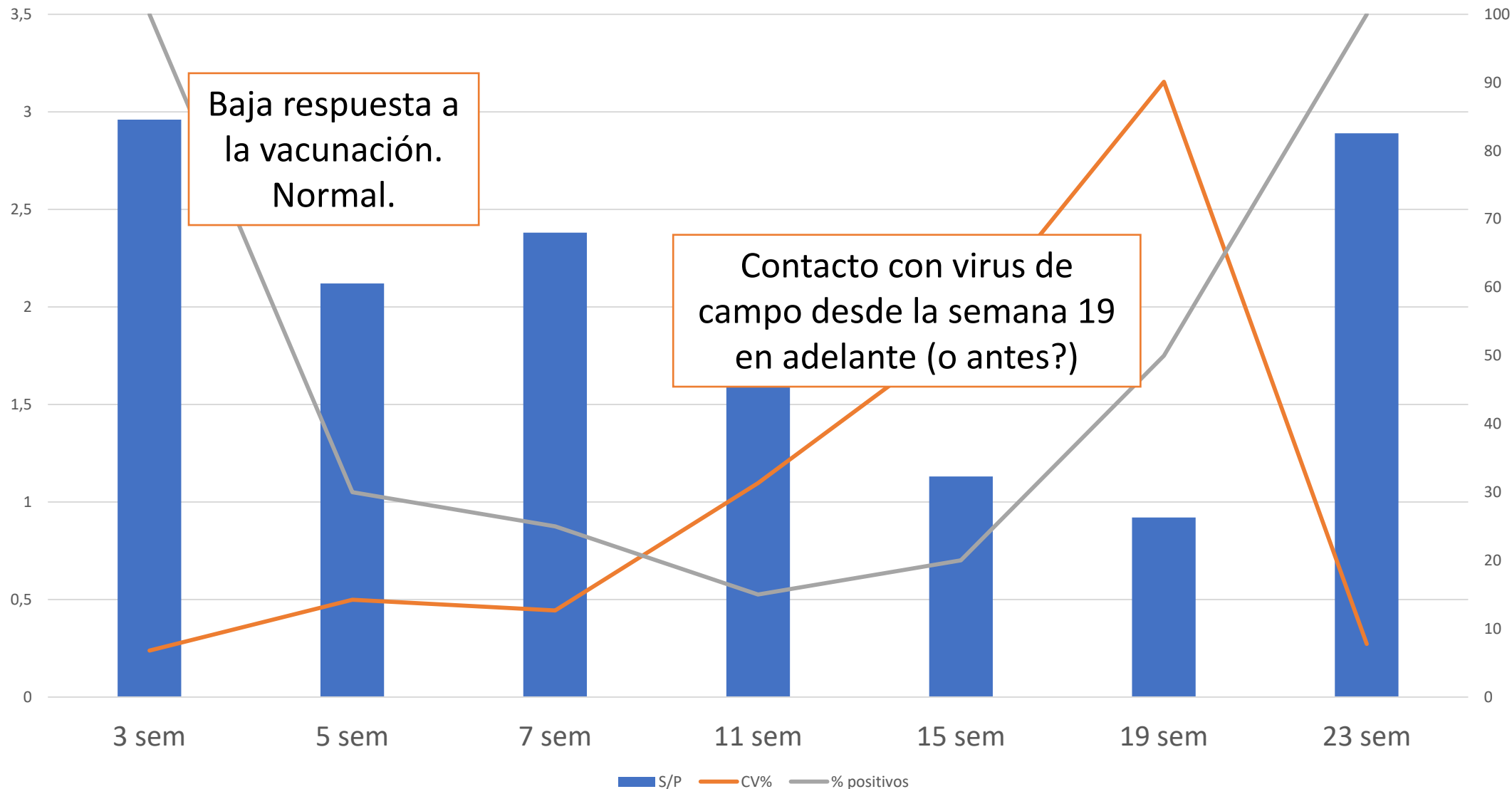
Vacuna 7 quimérica



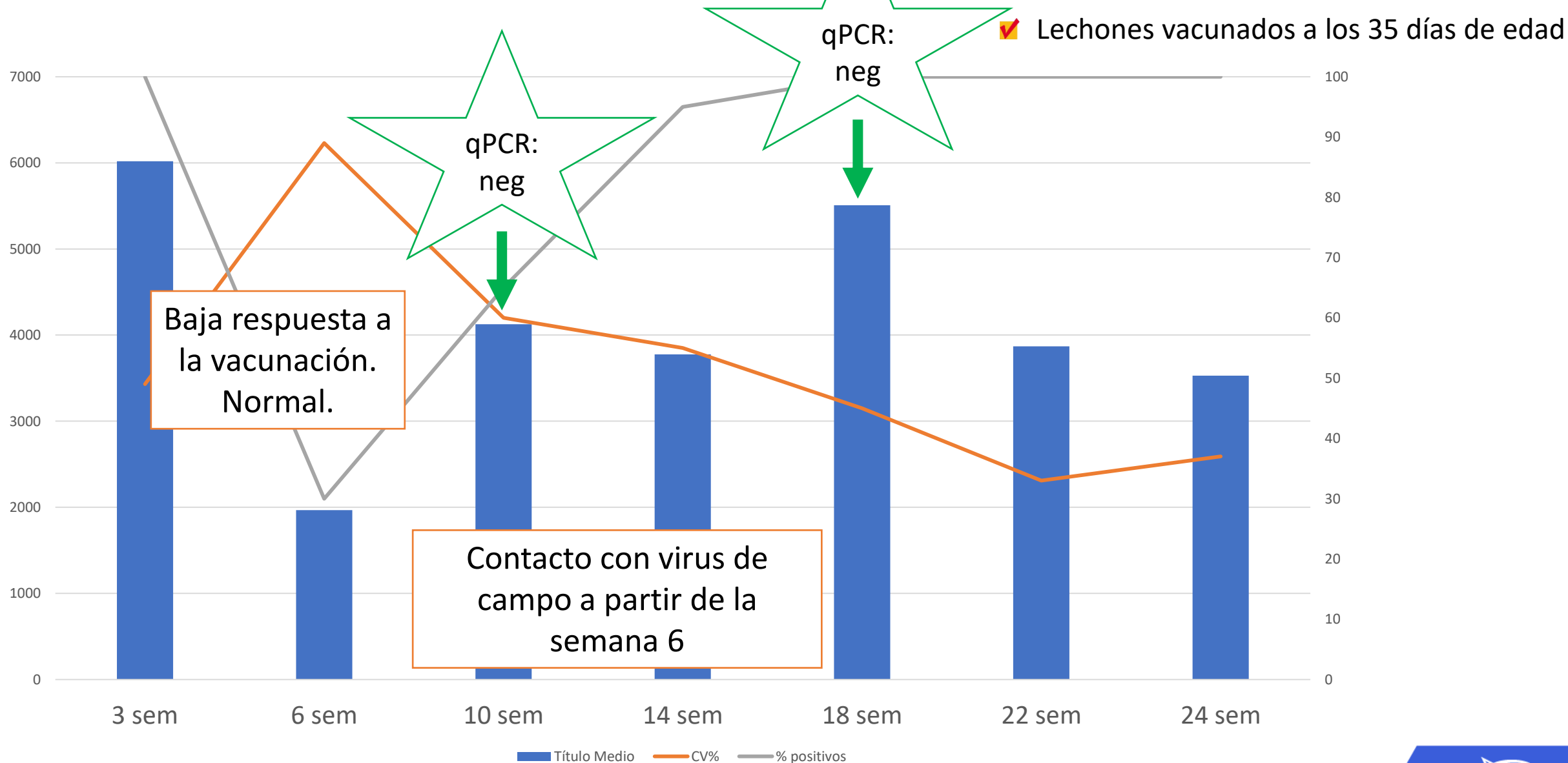
Vacuna M: subunitaria ORF2



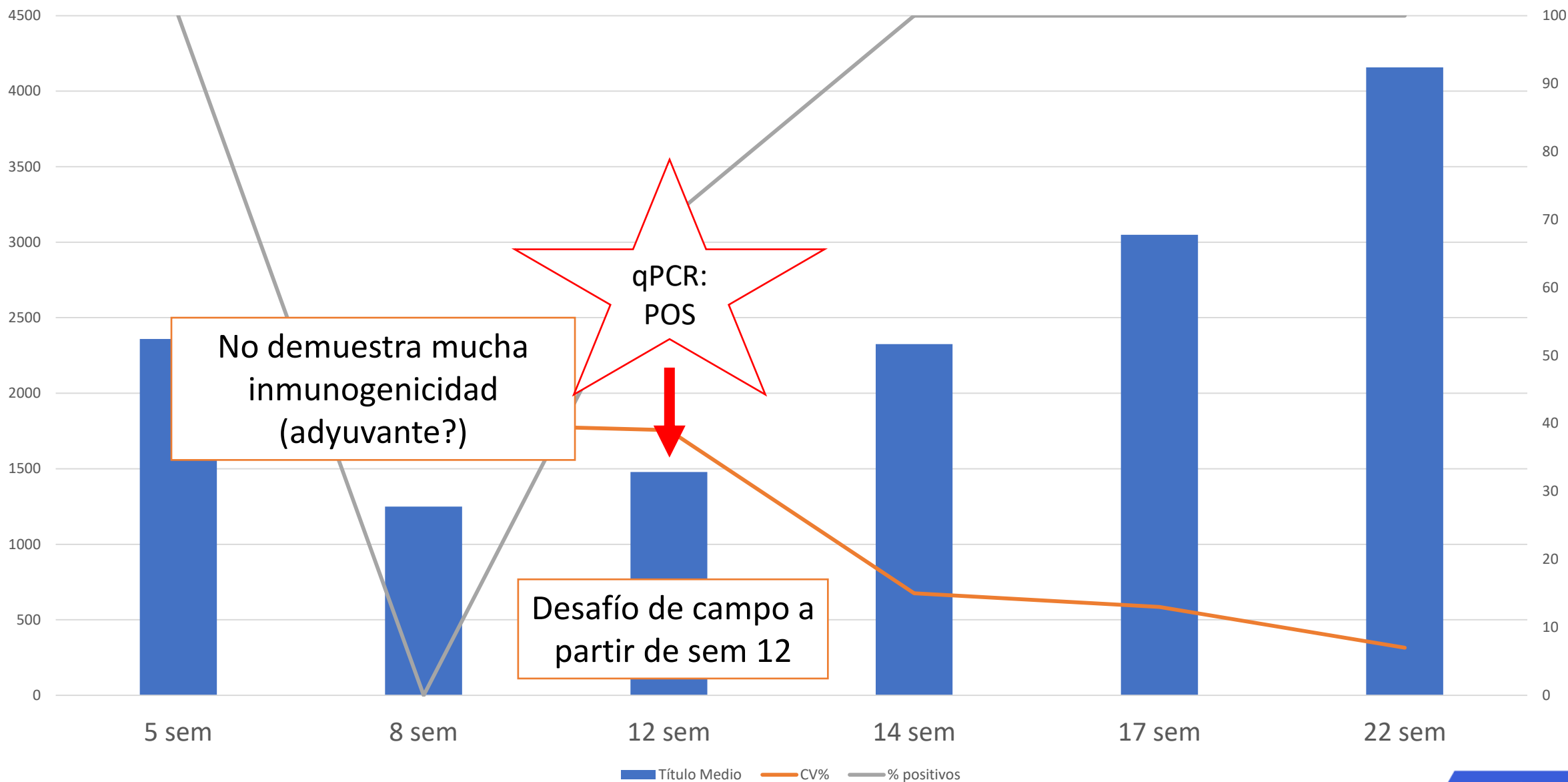
Vacuna B: subunitaria ORF2



Vacuna B: subunitaria ORF2



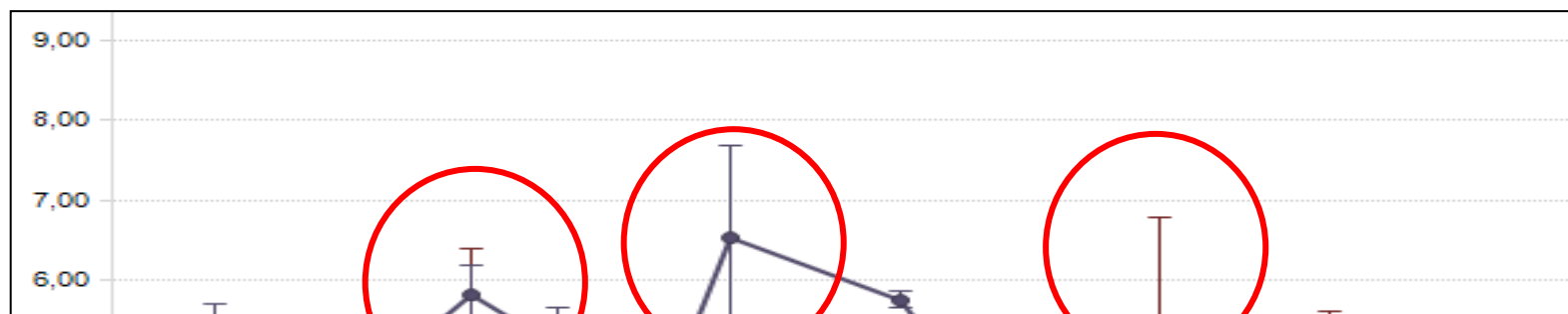
Vacuna B: subunitaria ORF2



Vacuna B: subunitaria ORF2



¿Se puede predecir el mejor momento para vacunar?



IPVS2022
26th international pig veterinary society
congress - rio de janeiro - brazil

Colostrum antibodies level assay against PCV2 as a possible tool to improve vaccination

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Introduction

The interference between maternally derived antibodies (MDA) and post-vaccinal seroconversion is well known for PCV2, though its clinical impact is still debated (1). Successive studies described here have been performed to assess the interest of assaying antibodies in colostrum as a tool to improve PCV2 vaccination program.

Results

The threshold of interference between MDA and post-vaccinal seroconversion was calculated as $S/P = 1.1$. This threshold was consistent with a threshold of protection against PCV2 infection from previous correlation between antibody levels (assayed by IPMA) and viremia (3), and from the correlation between the ELISA S/P ratio and the antibody levels by IPMA (2). The vaccination age calculated from the 90th percentile of the colostrum S/P was rounded up per week, for practical implementation at farm level. Additionally, the 10th percentile of the colostrum S/P was calculated to check if it is below or above 2. As this value corresponds to a duration of protection around 4 weeks of age, if at least 10% of sampled sows have a colostrum $S/P < 2$, it would be recommended to vaccinate the sows to improve the maternal immunity transferred to piglets. The predicted vaccination age ranged from 3 to 7 weeks of age in the 91 Taiwanese farms investigated. The colostrum 10th percentile and mean S/P ratio were significantly higher in the farms vaccinating gilts or/and sows against PCV2, reflecting the potential impact of dams vaccination on immunity transfer to piglets.

Table 1. Colostrum S/P ratio and predicted piglets vaccination age from 91 farms in Taiwan

Criteria (m ± SD or range)	Farms without gilts nor sows vaccination ¹	Farms with gilts and/or sows vaccination ²
10 th percentile S/P	1.1 ^a ± 0.5	1.7 ^b ± 0.5
Mean S/P ratio	1.9 ^a ± 0.2	2.1 ^b ± 0.2
90 th percentile S/P	2.4 ± 0.4	2.5 ± 0.4
Vaccination age	3-7 weeks	4-7 weeks

¹: 69 sampled farms. ²: 22 sampled farms. ^{a,b}: means in the same row with different superscripts differ ($p < 0.005$).

Discussion and Conclusion

This colostrum test could be a practical tool to revisit PCV2 vaccination program for piglets and sows, taking into account vaccine used and proper colostrum intake.



- Existen **herramientas fácilmente disponibles** para el monitoreo y control del PCV2
- **ELISA y PCR en combinación** son herramientas extremadamente útiles
- La **interpretación es sencilla** cuando contamos con la información necesaria



AVANCES Y PERSPECTIVAS
de la industria en la región!

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