

CIRCOQ: Targeted PCV2 subunit vaccine in field

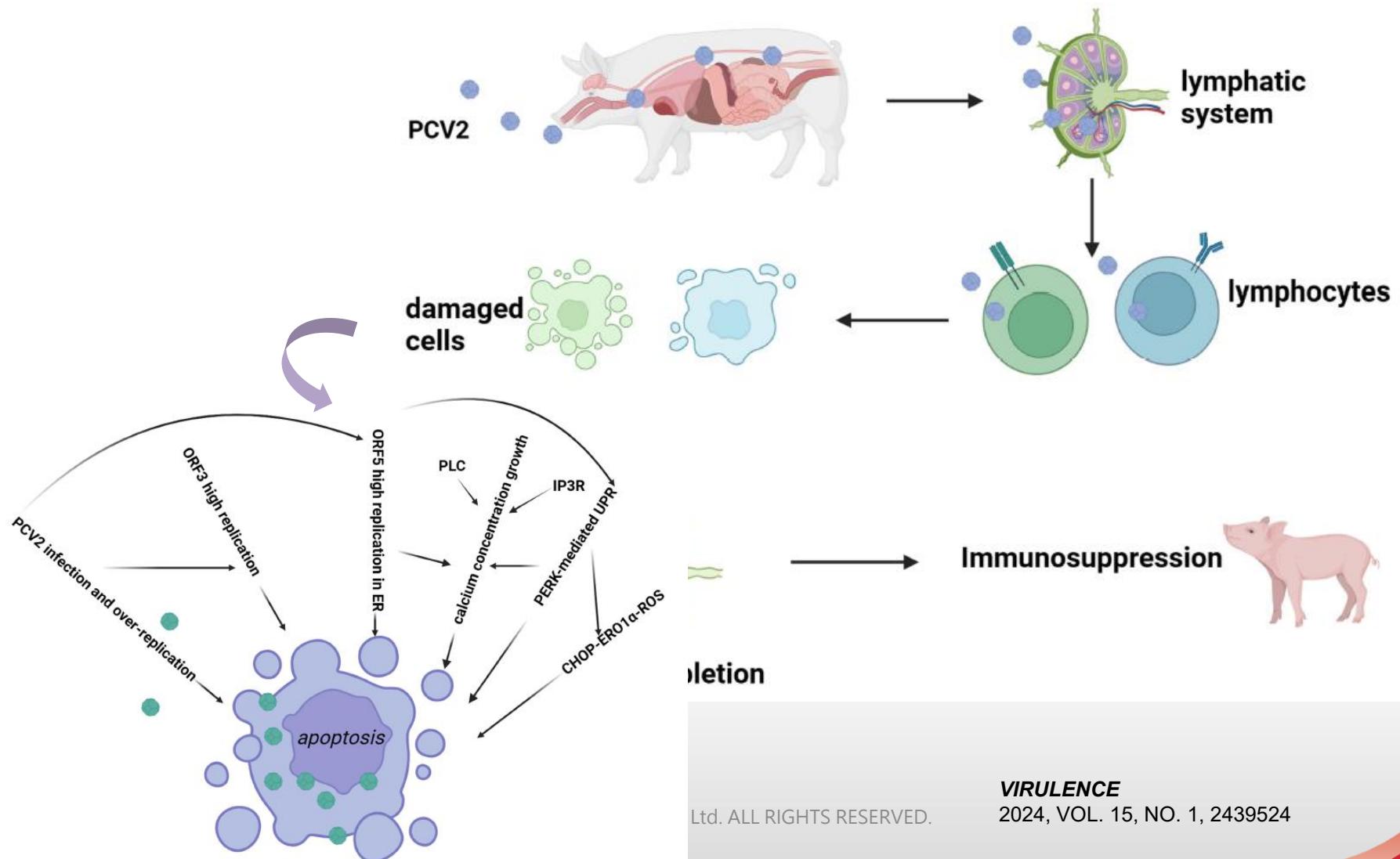
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Chief Technology Officer



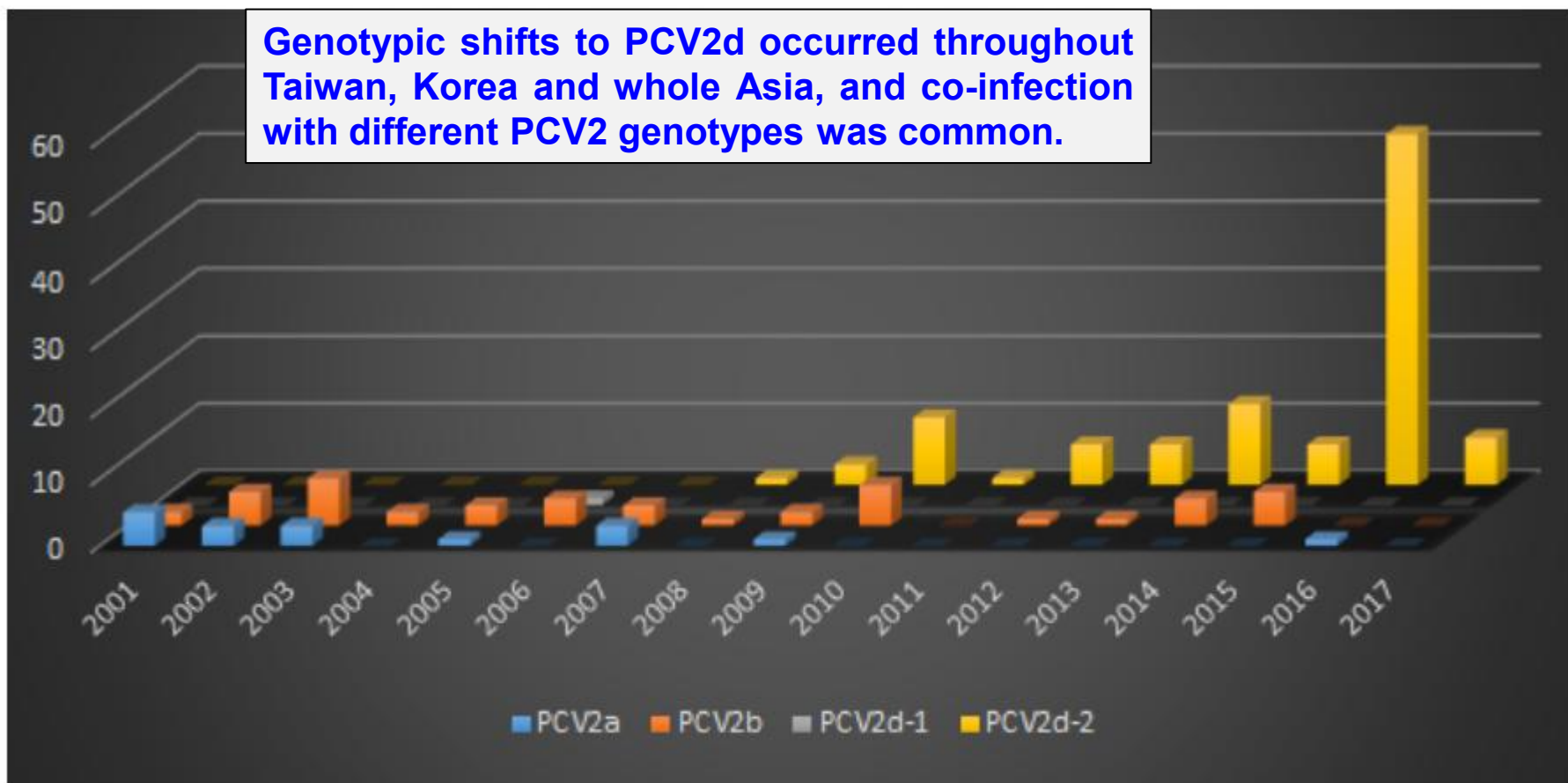
Reber Genetics
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Immunosuppression due to PCV2 infection




台灣近年以PCV2d為主要型別

Genotypic shifts to PCV2d occurred throughout Taiwan, Korea and whole Asia, and co-infection with different PCV2 genotypes was common.

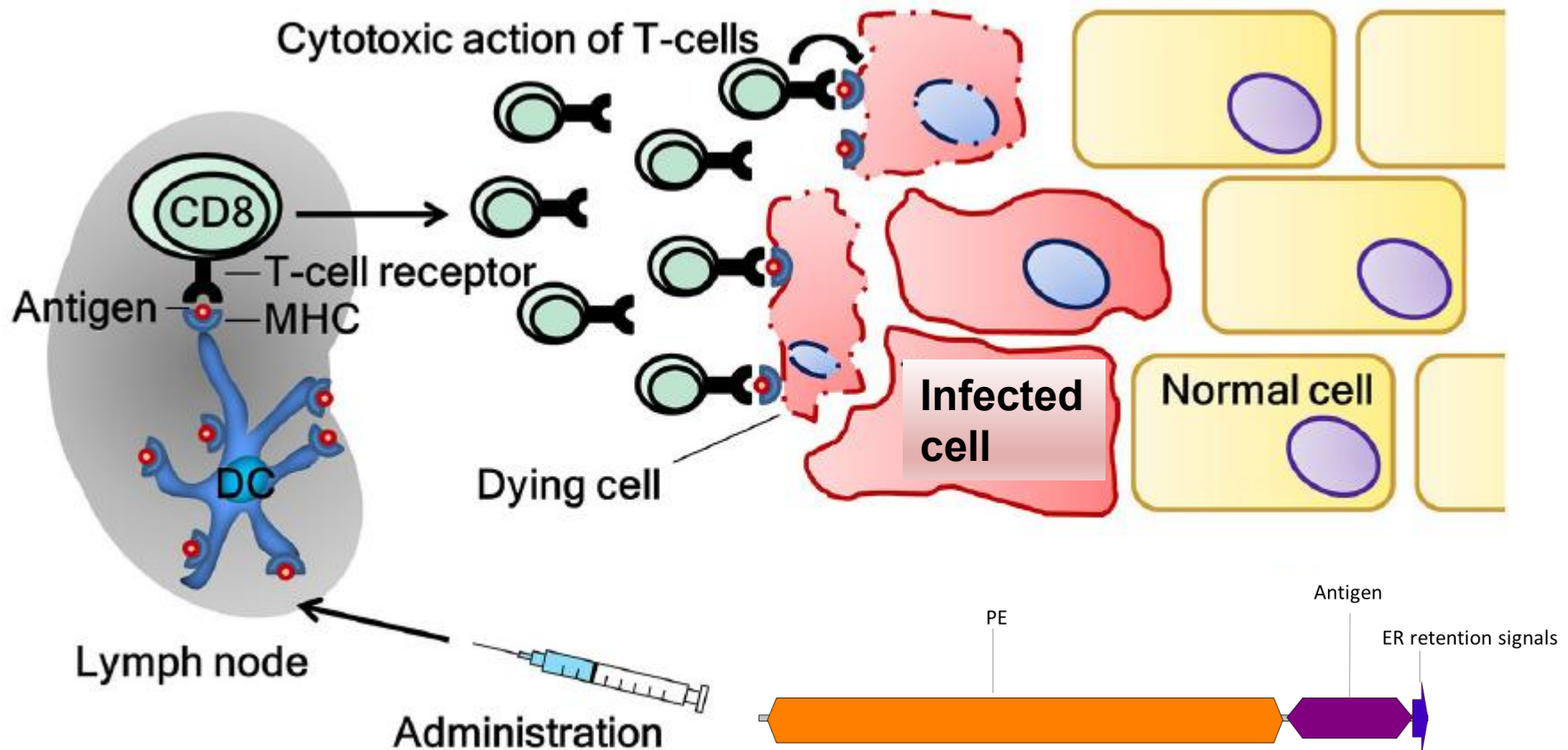


PCV2 vaccines in Taiwan



Product name	CIRCOQ	CircoFLEX	Porcilis PCV2	CIRCOVAC	FOSTERA PCV
Brand	 瑞寶基因 Reber Genetics	Brand B	Brand M	Brand C	Brand Z
Type	Self-adjuvant ORF2 Subunit	ORF2 Subunit	ORF2 Subunit	Killed whole	Killed whole
Strain	PCV2b PCV2d	PCV2a	PCV2a	PCV2a	PCV2a/ PCV1
DOI	>22 weeks	>16 weeks	>22 weeks	--	23 weeks

Protein-based DC vaccine by Reber



Publication of Reber's subunit vaccines



• PRRSQ

- Oh, T., Kim, H., Park, K. H., Jeong, J., Yang, S., Kang, I, Park, S-J, and Chae, C. (2019)
A comparative study of the efficacy of a porcine reproductive and respiratory syndrome subunit and a modified-live virus vaccine against respiratory diseases in endemic farms. *Can J Vet Res.* 83: 110–121
- Oh, T., Kim, H., Park, K. H., Jeong, J., Kang, I., Yang, S., Chae, C (2019)
Effectiveness of a commercial porcine reproductive and respiratory syndrome virus (PRRSV) subunit vaccine against heterologous PRRSV-1 and PRRSV-2 challenge in late-term pregnant gilts. *Can J Vet Res.* 83: 248–254.
- Jeong, J, Kim, S. , Park, C , Kang, I, Park, K. H., Ham, J. H. , Chae, C. (2018)
Effect of Vaccination With a Porcine Reproductive and Respiratory Syndrome Subunit Vaccine on Sow Reproductive Performance in Endemic Farms. *Vet Rec.* 26;182 :60
- Duy, D. T., Kim, H., Jeong, J., Park, K. H., Yang, S., Oh, T., Kim, S., Kang, I., and Chae, C. (2018)
Comparative evaluation of the efficacy of commercial and prototype PRRS subunit vaccines against an HP-PRRSV challenge. *J Vet Med Sci* 80: 1463–1467.
- Jeong, J, Park, C, Choi, K, Chae, C. (2017)
Evaluation of the new commercial recombinant chimeric subunit vaccine PRRSFREE in challenge with heterologous types 1 and 2 porcine reproductive and respiratory syndrome virus. *Can J Vet Res.* 81: 12–21.

• CIRCOQ

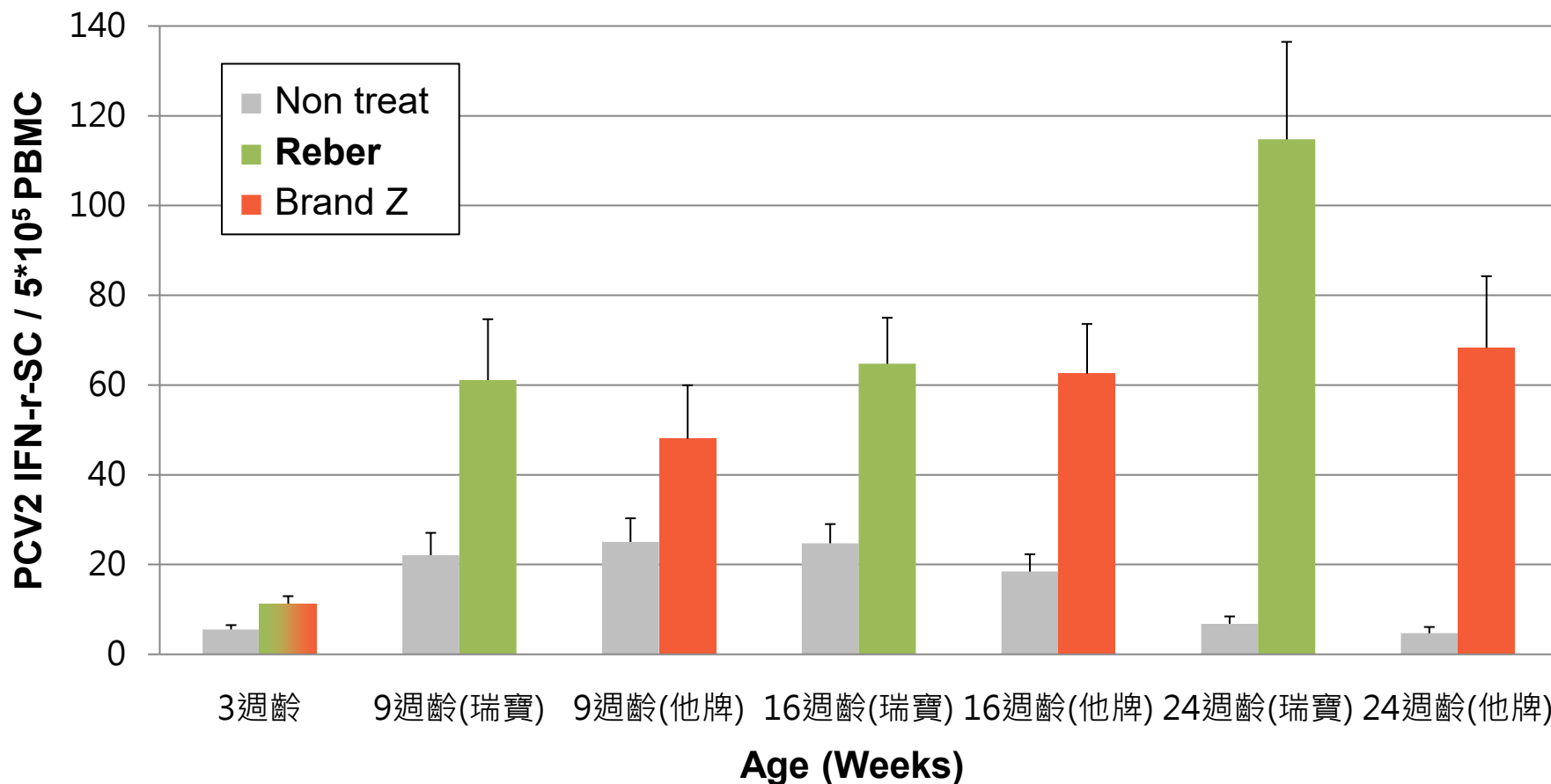
- **Duy, D. T., Khanh, D. T. V., Anh, Q. T., Lee, D., Chang, C. J., Wu, P. W., Toan, N. T. and Chea, C. (2020) A comparative efficacy of CIRCOQ™ PCV2 subunit vaccinated one-versus two-dose in high MDA-derived antibody piglets against disease caused by naturally occurring PCV2-type 2d in a Vietnamese swine farm. *Can J Vet Res.***

CIRCOQ induces higher cellular-immunity against PCV2 virus



400 sows farm

CIRCOQ vs other brand/IFN-gamma



Reber



Brand Z



400 sows farm



2-weeks earlier to the market



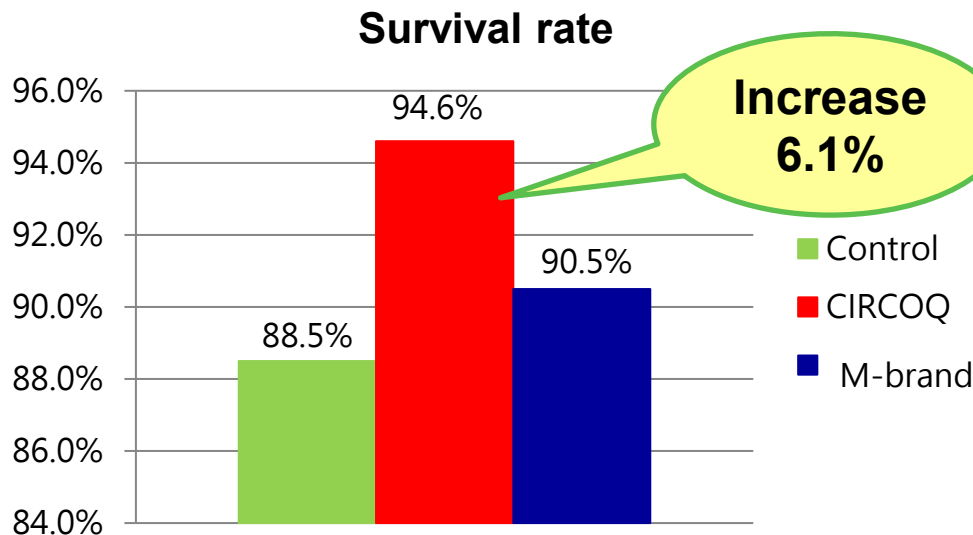
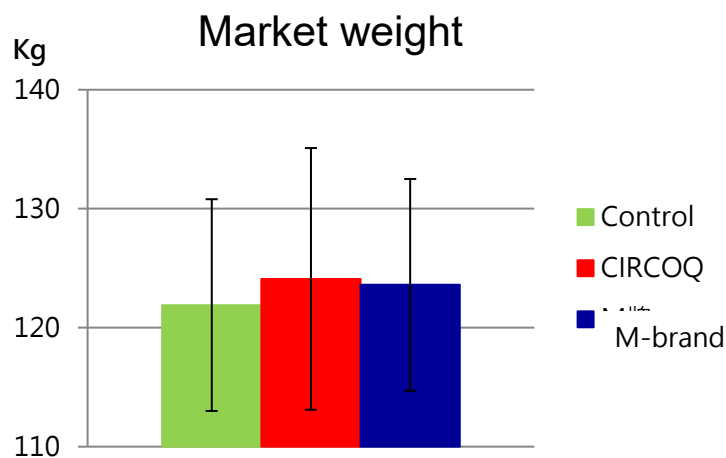
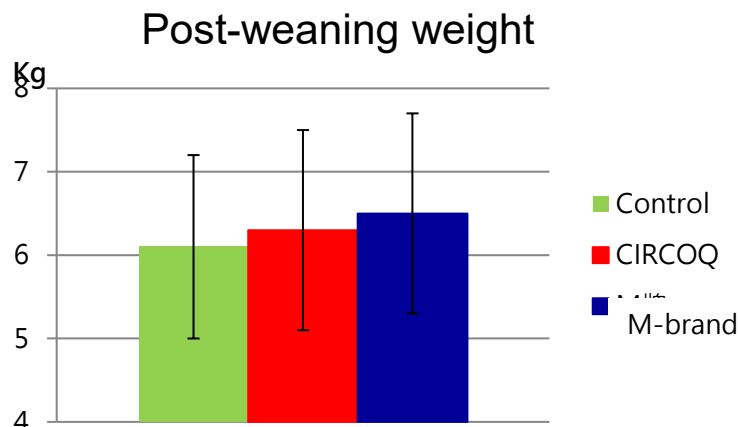
	Number	Date	Weight
CIRCOQ	100	2018/10/18	126kg
B-brand	75	2018/11/01	129kg

- Finished pigs feed: 4 kg/day
- Save 448 NTD/pig for early market sale
- Total feed cost decrease: 44,800 NTD/100 pigs

Increasing survival rate



Comparison to M-brand at farrow-to-finish pig farm in Taiwan



- 6.1% increase in survival rate
- 1000 piglets * 6.1% * 2000 NTD/piglet
- Extra 122,000 NTD income

CIRCOQ answer about perfect vaccine



Reber
Genetics

Future PCV-2 vaccine

- Update vaccine strains **Ans: Yes, PCV2d and PCV2b**
- Improved immunogenicity **Ans: Yes, targeted to DC cell.**
- Polyvalent vaccines (PCV2 & other Ag) **Ans: Yes, easily to form PCV2+PCV3, PCV2+mycoplasma ready-to-use vaccine.**
- Moving to eradication > DIVA capability** **Ans: Yes, antibody of subunit antigen can be differentiated.**

Vaccines	Examples of vaccine in development
Multiple agents/strains	Live PCV1-2a expressing PRRSV epitopes PCV2 expressing FMDV epitopes Chimeric PCV1-2b rSwPox expressing multiple antigens (<i>Strep</i> -PCV2ORF2-IL-8)
Improve efficacy	Fusion protein with molecular adjuvant DNA vaccine

We Innovate One Health

~Thank You~

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