



Alexia LÉPINE, MSc

CCC3  
Carbohealth  
SP2

Effects of pre-  
and probiotics on  
the immune  
system

WP leaders

Dr. J Mes (FBR-WUR)

FBR-WUR

Prof. Dr. H. Wichers

Dr. N de Wit

E Oosterink

UMCG

Prof. Dr. P de Vos

A Lepine (MSc)

Partners



For more information,  
Contact Dr. J Mes  
Jurriaan.mes@wur.nl

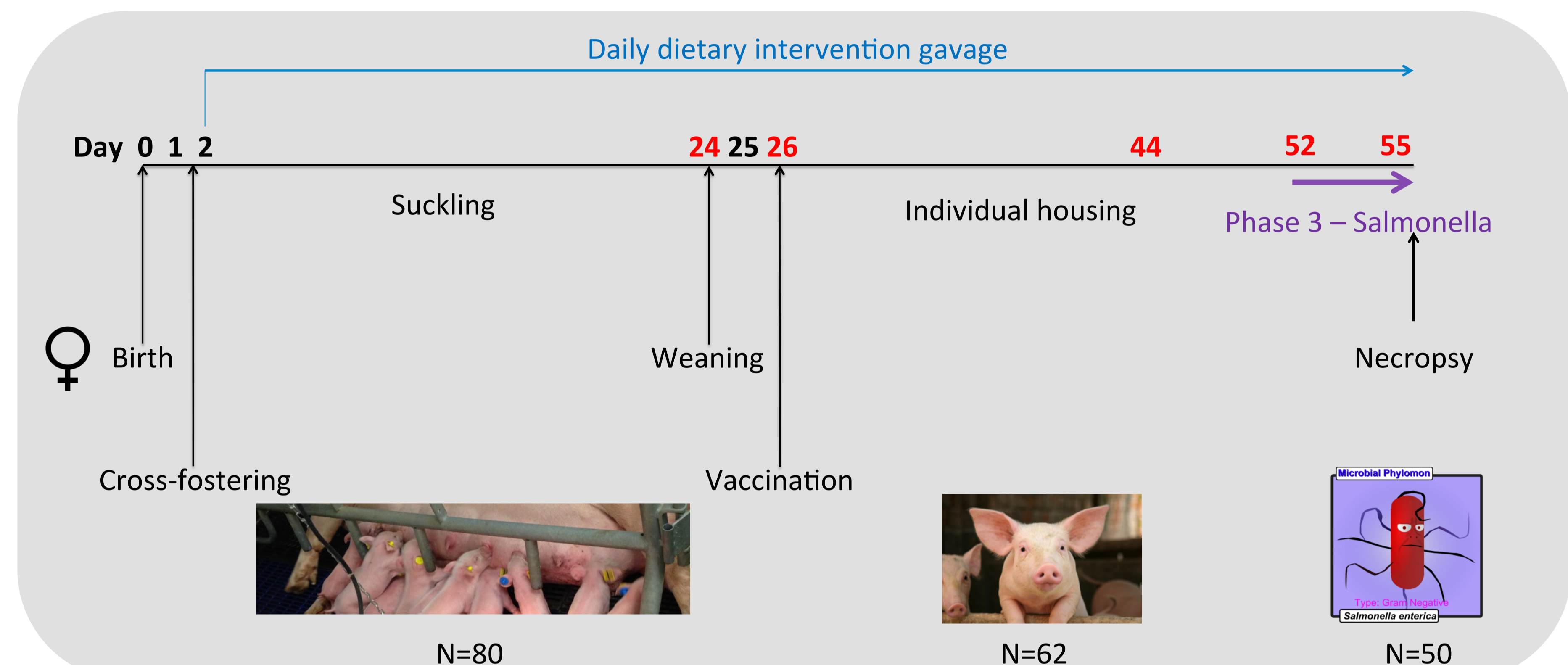
## Combined dietary supplementation of long chain inulin and *Lactobacillus acidophilus* W37 in neonate piglets supports vaccination efficacy against *Salmonella* Typhimurium

### Introduction

Enteropathogenic *Salmonella* is the most common food-borne illness worldwide affecting over 90 million people yearly and about 3 million deaths. Pigs represent a major reservoir of *Salmonella* for the human population being a major animal protein source.

### Hypothesis

1. Early life administration of long-chain inulin and *L. acidophilus* W37 enhances oral vaccination efficacy
2. This supplementation enhances quality of life of the piglets

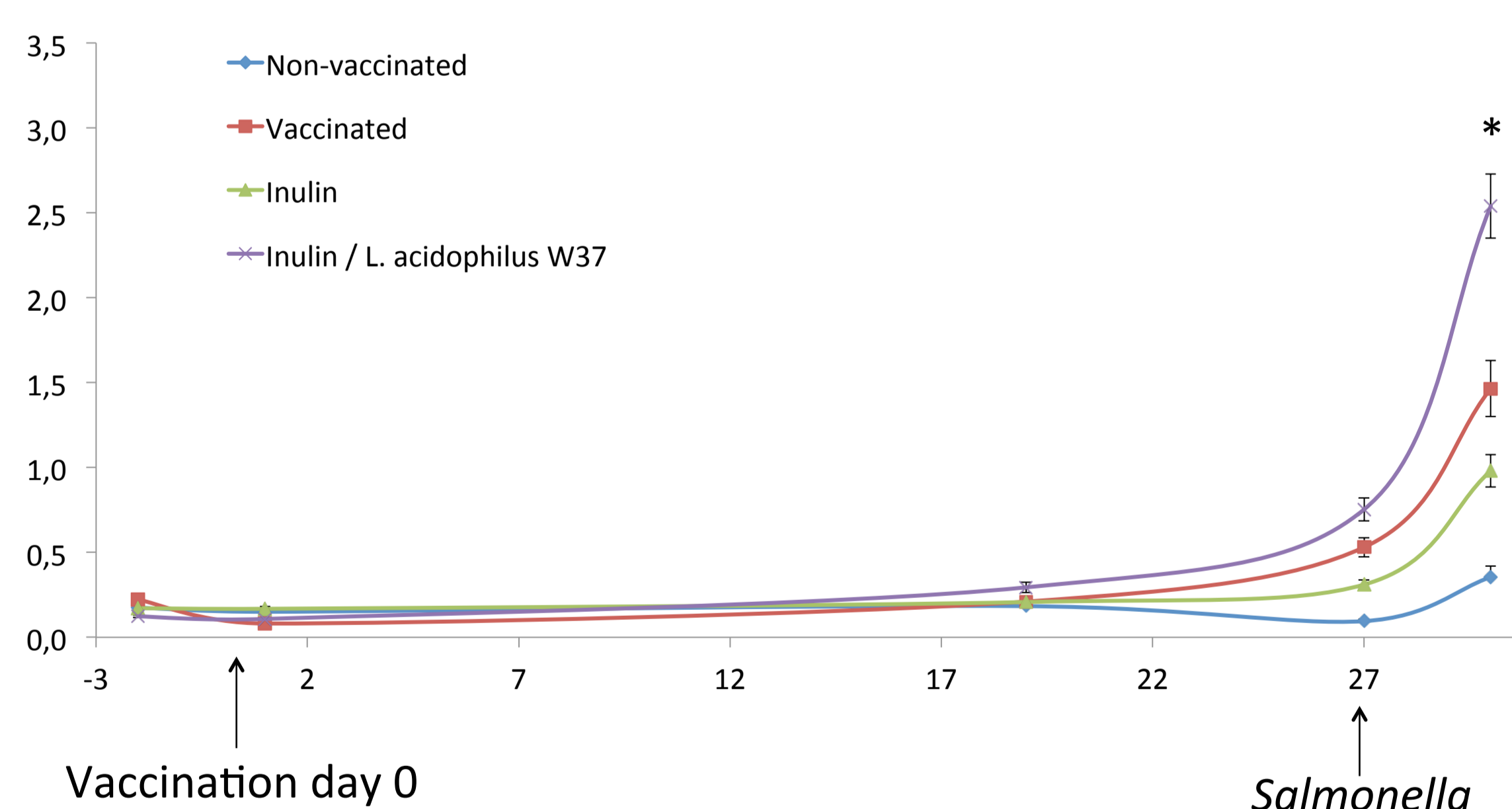


Trial design - in red blood sampling

### Results

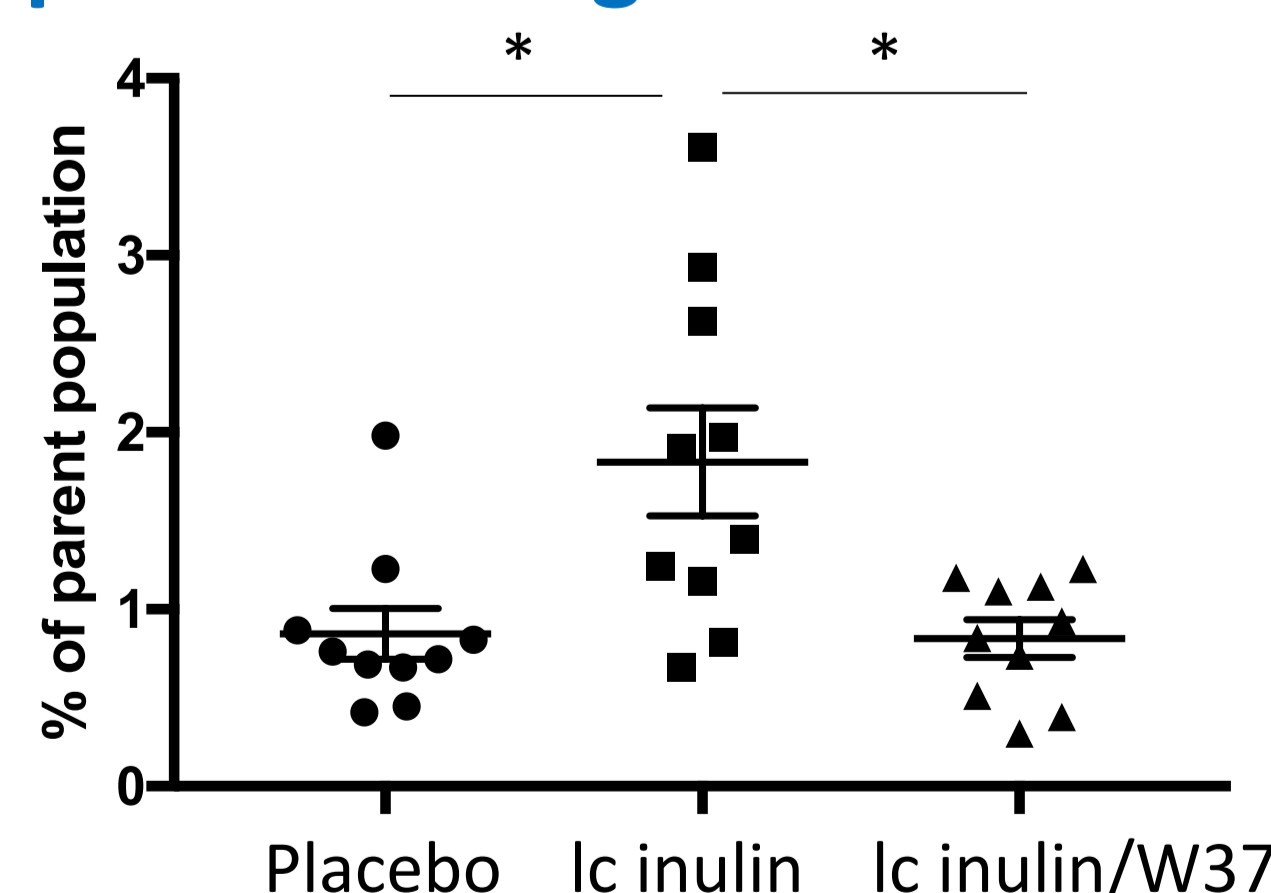
#### Long-chain inulin/*L. acidophilus* W37 doubles vaccination efficiency

Average % of *Salmonella* Typhimurium specific anti-bodies



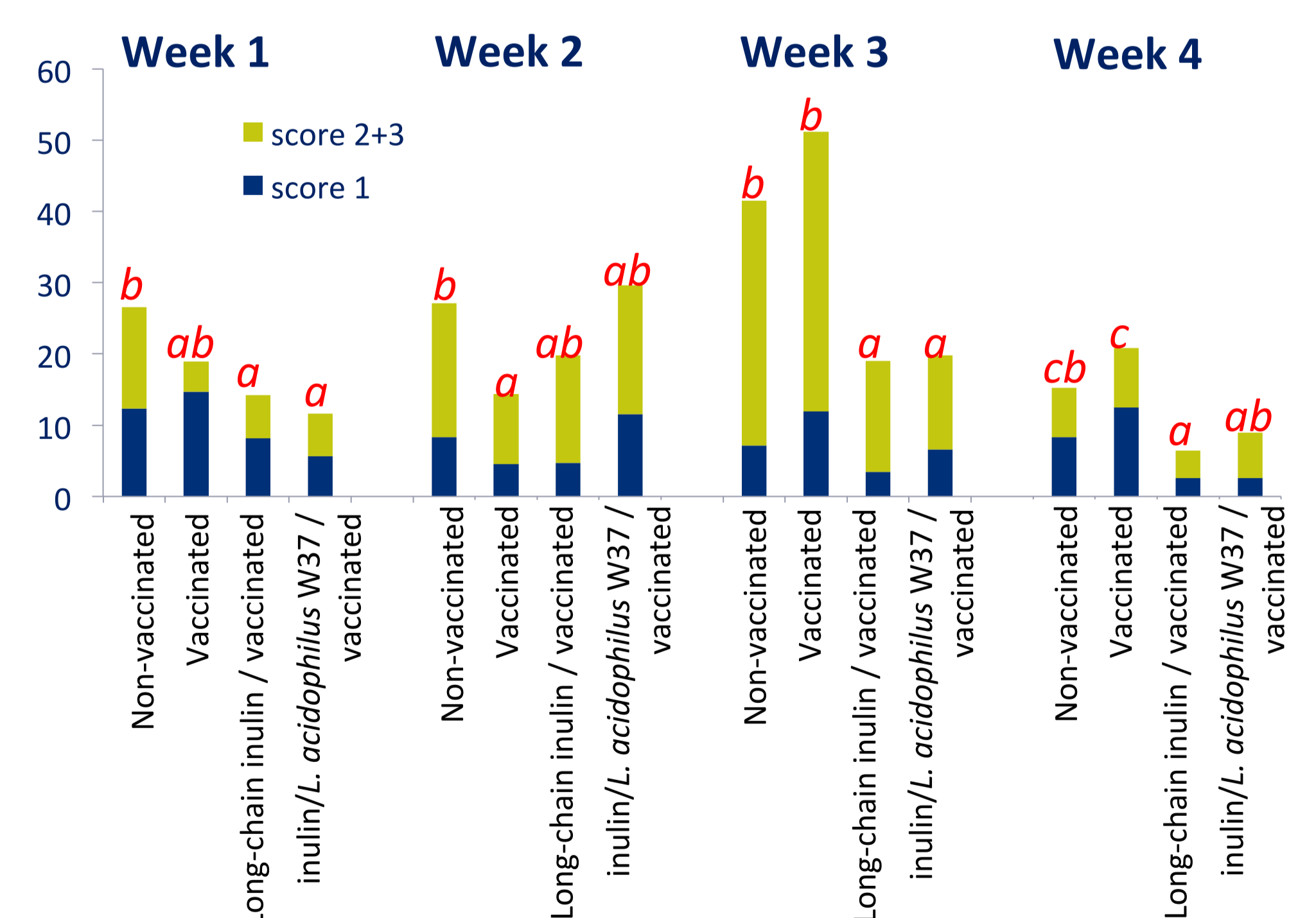
#### Regulatory NK cells frequency increases with long-chain inulin supplementation prior weaning and vaccination

Average % of CD56dim NK cells in piglets blood after 3 weeks of daily oral supplementation indicate a specific effect from the lc inulin alone but not with *L. acidophilus* W37



#### Long-chain inulin improves piglets health in weaning and *Salmonella* stress

% of animals with soft faeces (score 1) or mild diarrhoea (2, 3) Long-chain inulin alone or combined with *L. acidophilus* W37 significantly decreases diarrhoea occurrence and severity during weaning and *Salmonella* stress. Weeks post-weaning.



### Conclusions

Statistically significant

1. Antibody titre increased with lc inulin / W37 => systemic effect during oral vaccination
2. Diarrhoea decreased with both treatments upon weaning and challenge stressors
3. NK CD56dim cells increased with inulin treatment before weaning => immune maturation
4. Inulin improves feed efficiency in week 1 post weaning (data not shown)
5. Vaccination and challenge induced a clear response in the animals
6. No adverse effect of lc inulin and lc inulin / W37 on animal health