



Effect of environmental enrichment on natural auto-antibodies binding danger and neural antigens in healthy pigs

L. Luo, R. Geers, I. Reimert, B. Kemp, H. K. Parmentier, J. E. Bolhuis

Adaptation Physiology Group, Department of Animal Sciences, Wageningen University & Research, P.O. Box 338, 6700 AH, The Netherlands



Objective



- To investigate the chronic effects of environmental enrichment (straw-enriched housing) vs. barren housing on levels of natural auto-antibodies binding PC and MBP over time in pigs.
- To study the effect of regrouping (inducing acute stress) on these auto-antibodies.

Introduction



- Antibodies binding self structures (e.g. myelin basic protein, MBP) and danger signals (e.g. phosphorylcholine, PC) are thought to perform homeostatic functions, and were earlier found in man to be affected by various forms of infectious, metabolic and behavioural challenges.

Materials & Methods

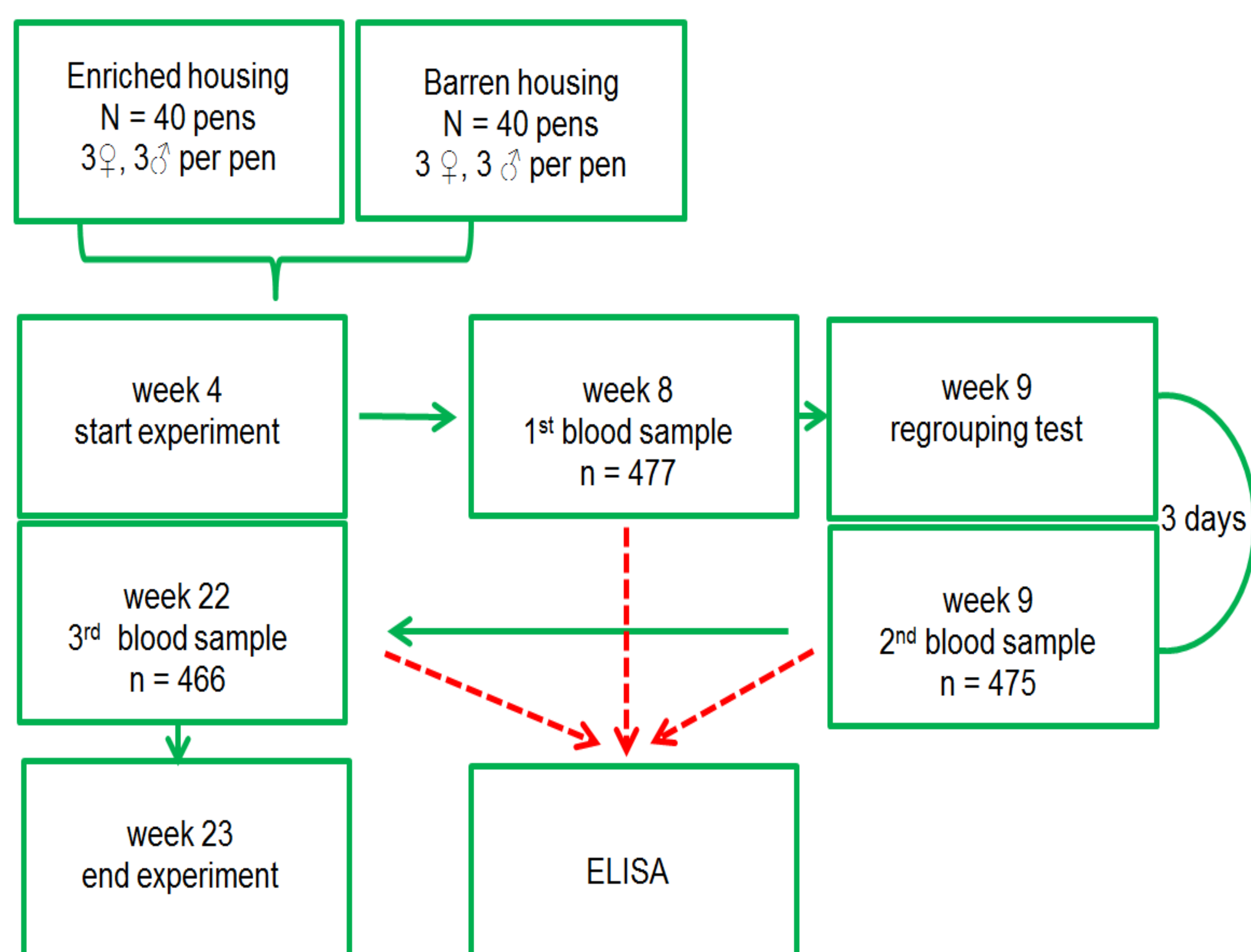


Fig 1: In total, 480 pigs were housed in 80 pens, blood samples were taken from pigs at 3 time points. PC-BSA and MBP antibody titers were measured by ELISA.

Conclusion



- Environment, gender, litter and regrouping stress affected levels of natural auto-antibodies related with neural (MBP) and cell damage (PC).
- Environmental enrichment may reflect or affect healthy pigs' immune competence, (mental) health and welfare.

Results



- Enriched-housed pigs had higher levels of IgM binding MBP, and tended to have higher levels of IgG binding MBP and IgA binding PC-BSA than barren-housed pigs (Fig 2).
- Regrouping stress (Δ week 9 – week 8) affected auto-antibodies binding PC-BSA, but not MBP (Fig 2).
- Each natural auto-antibody measured in this study was affected by gender and litter.

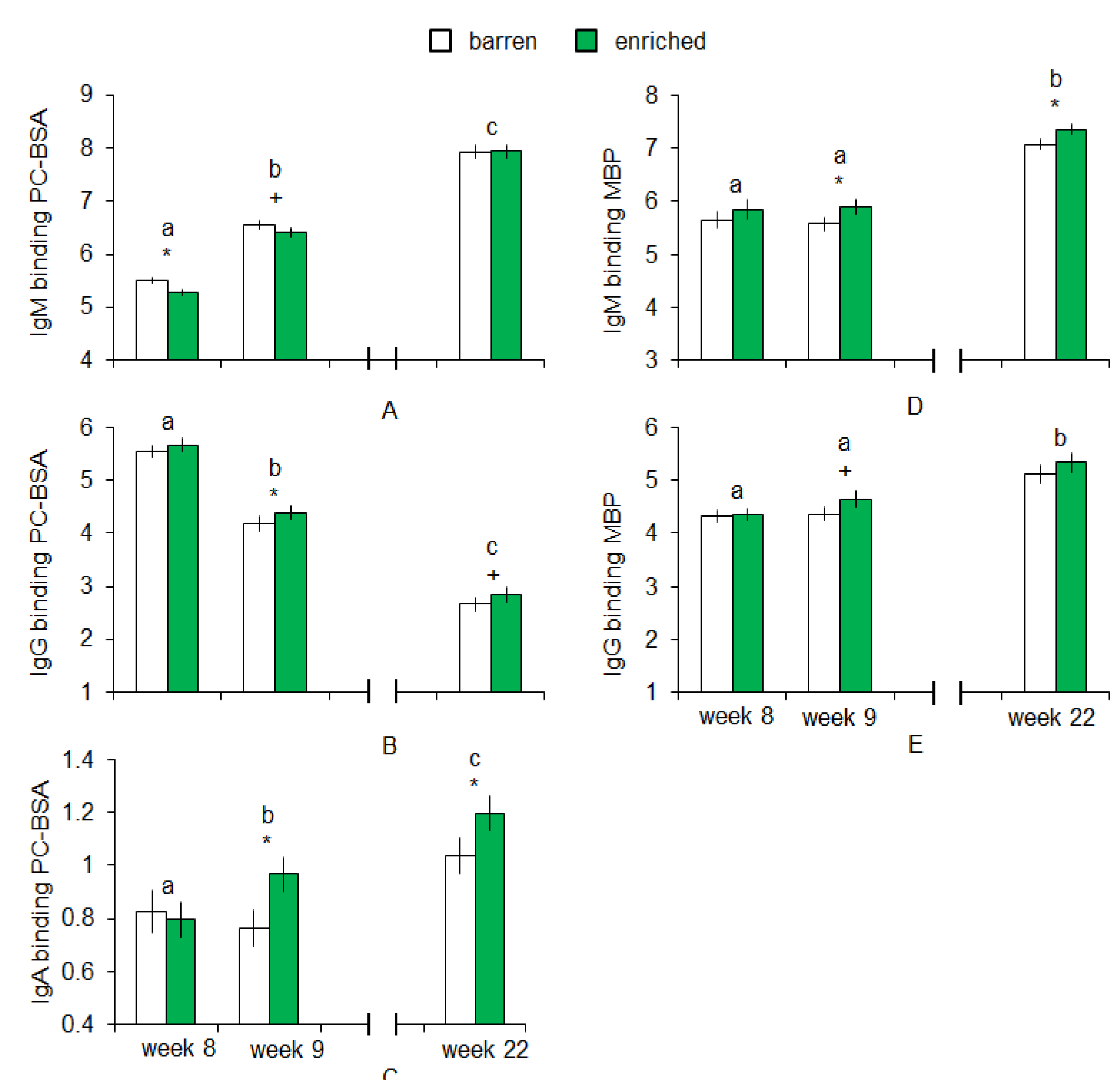


Fig 2: Means and SEM of IgM (A), IgG (B) and IgA (C) titers to PC-BSA, IgM (D) and IgG (E) titers to MBP of pigs (* $P < 0.05$; + $P < 0.10$). Week differences are indicated by a, b, c.



For quality of life

Corresponding email: lu.luo@wur.nl

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