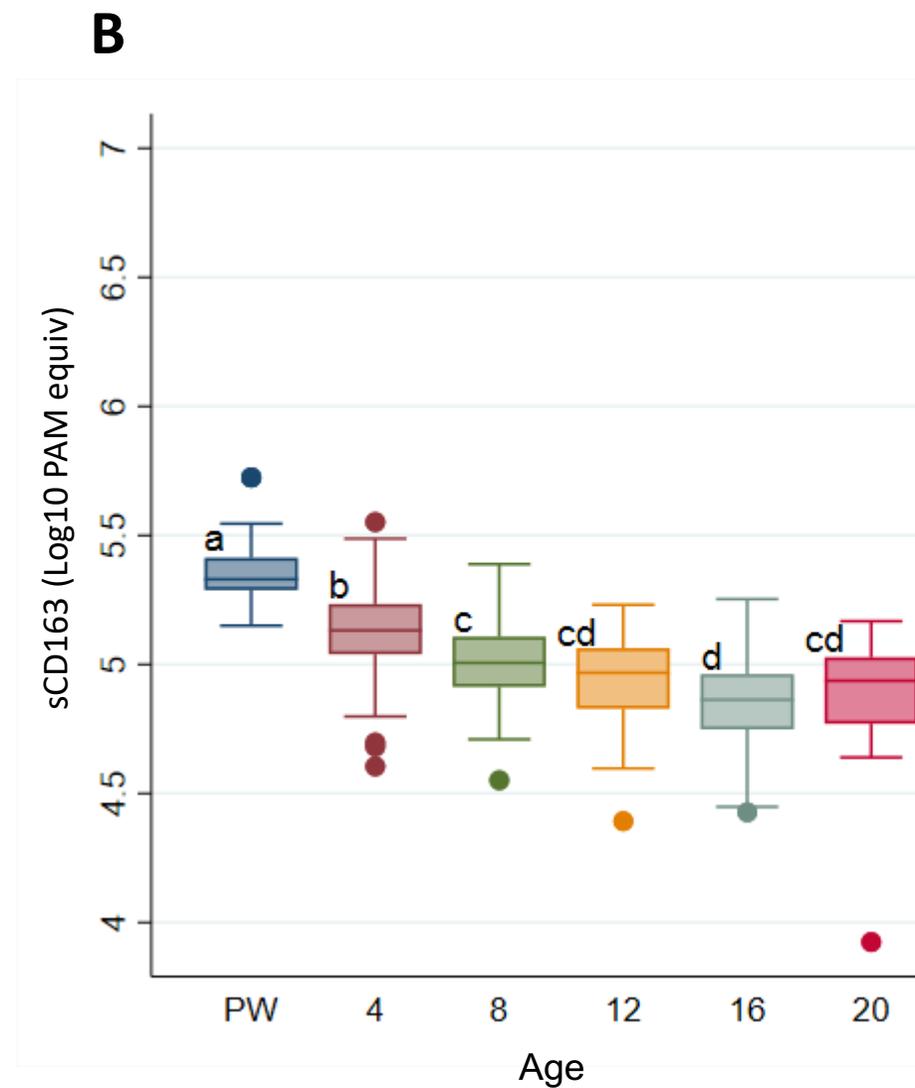
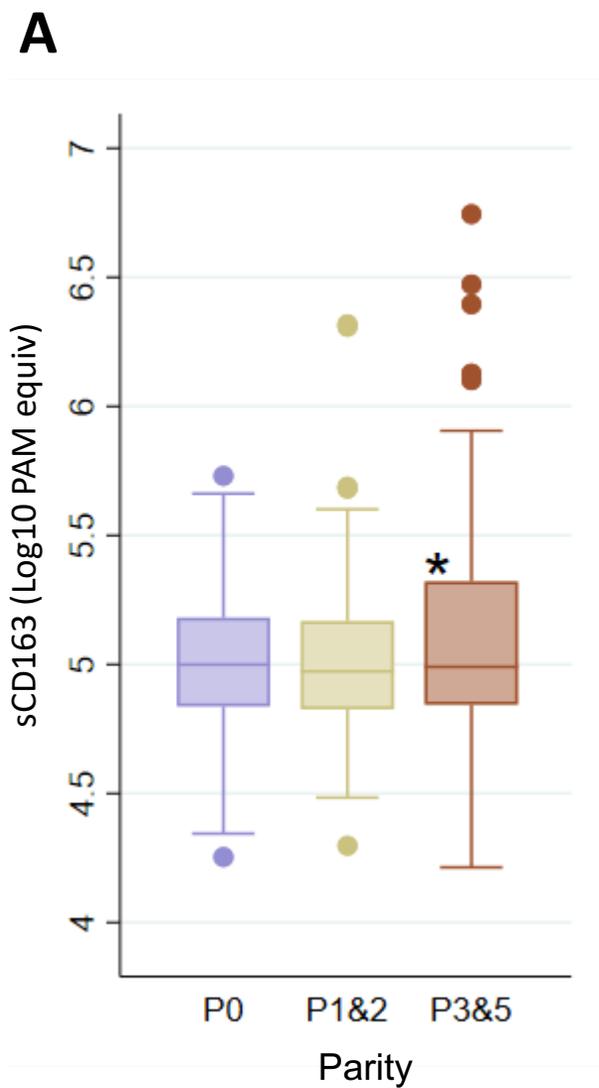
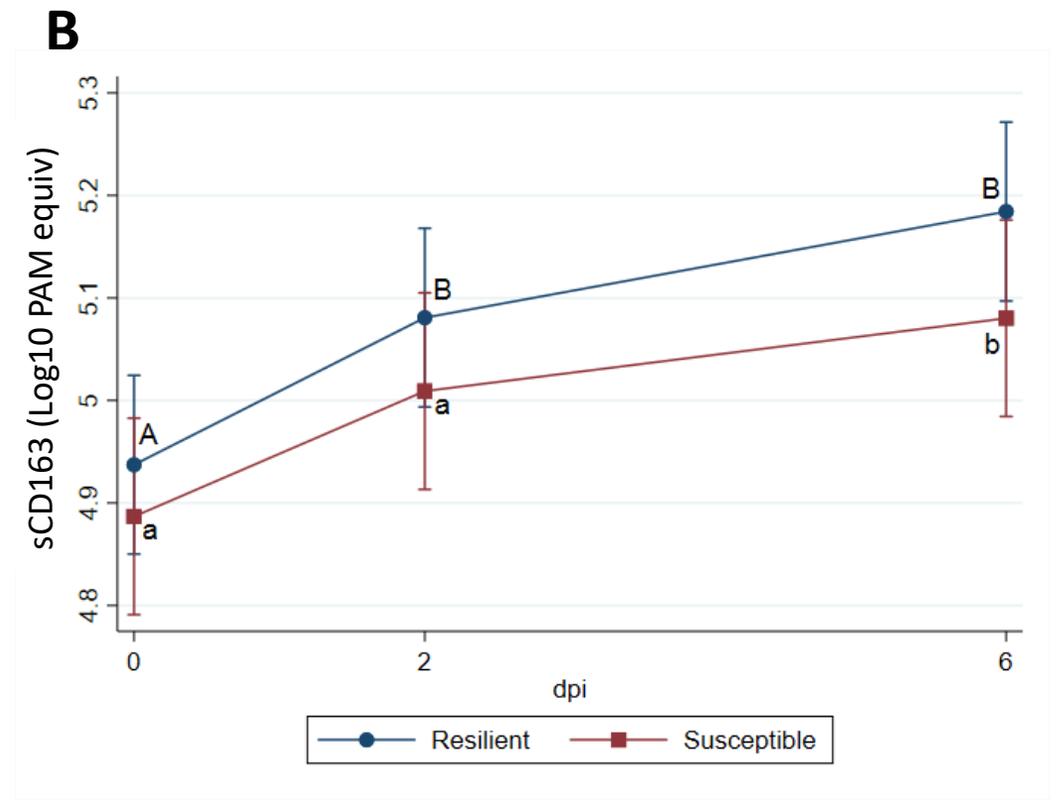
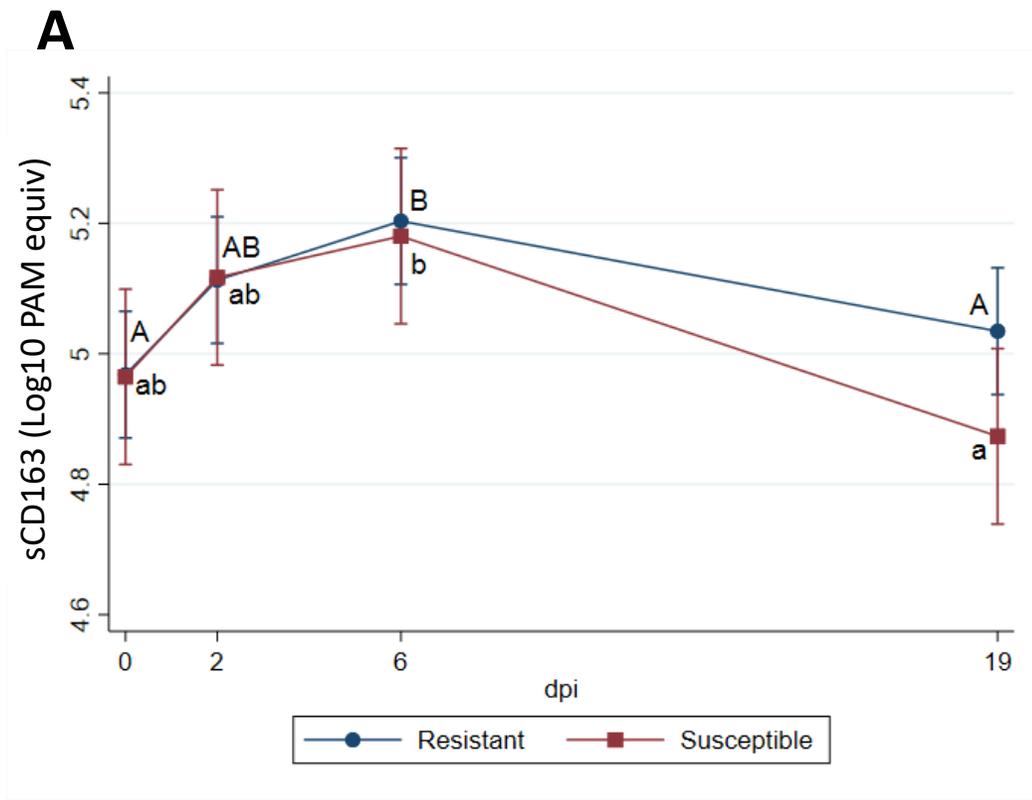


Project 17-011  
Final Report  
Supplemental Figures

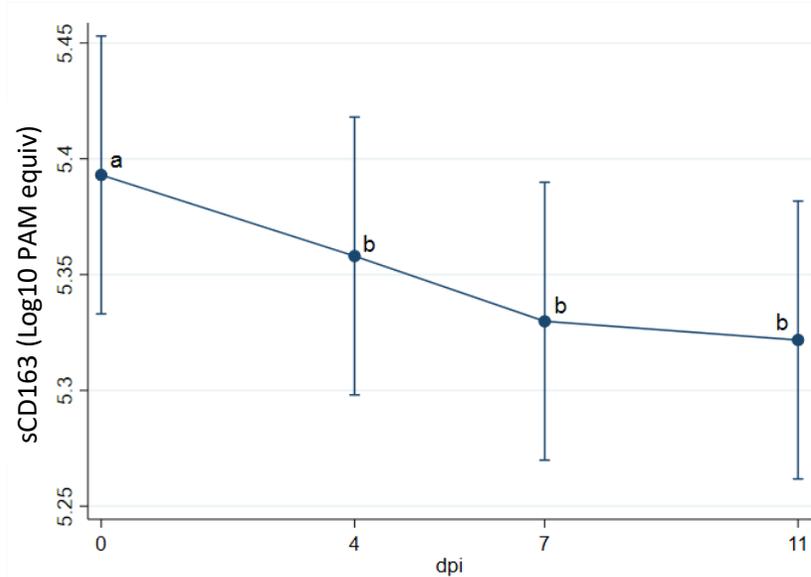
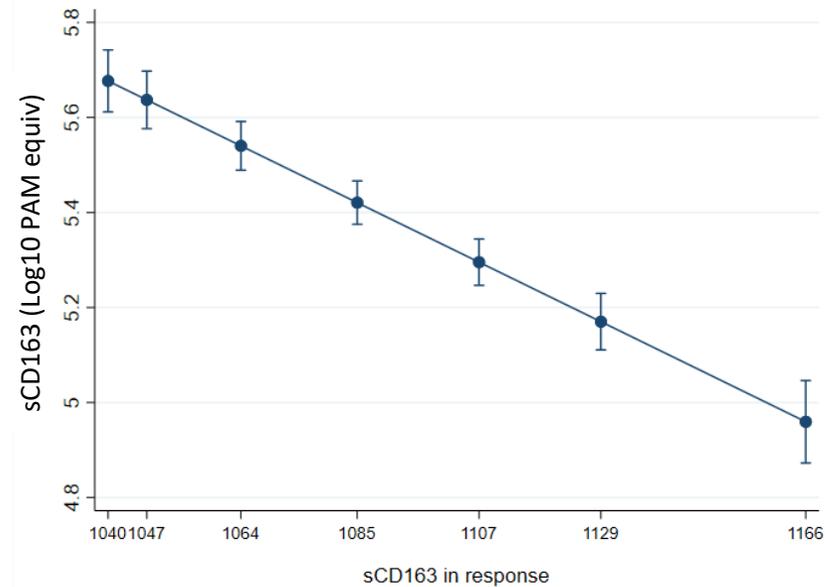
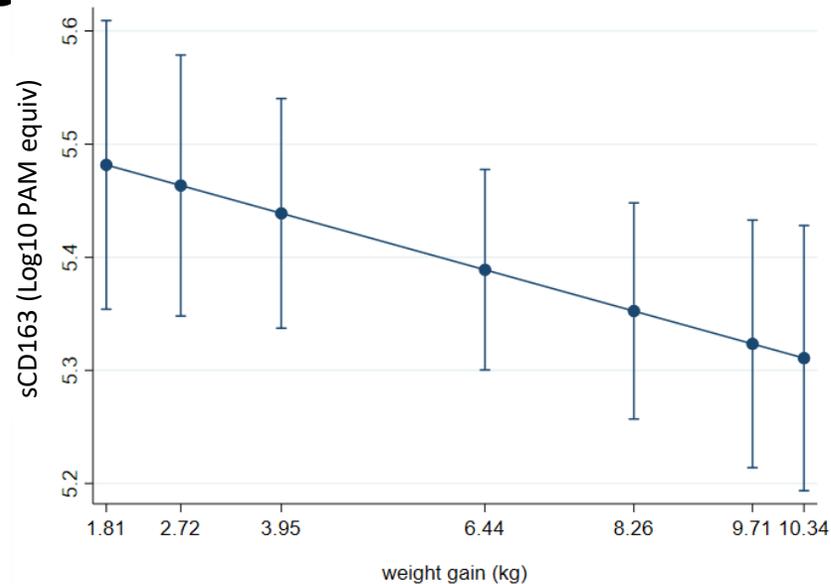
John Harding  
Western College of Veterinary Medicine  
University of Saskatchewan  
31Oct2020



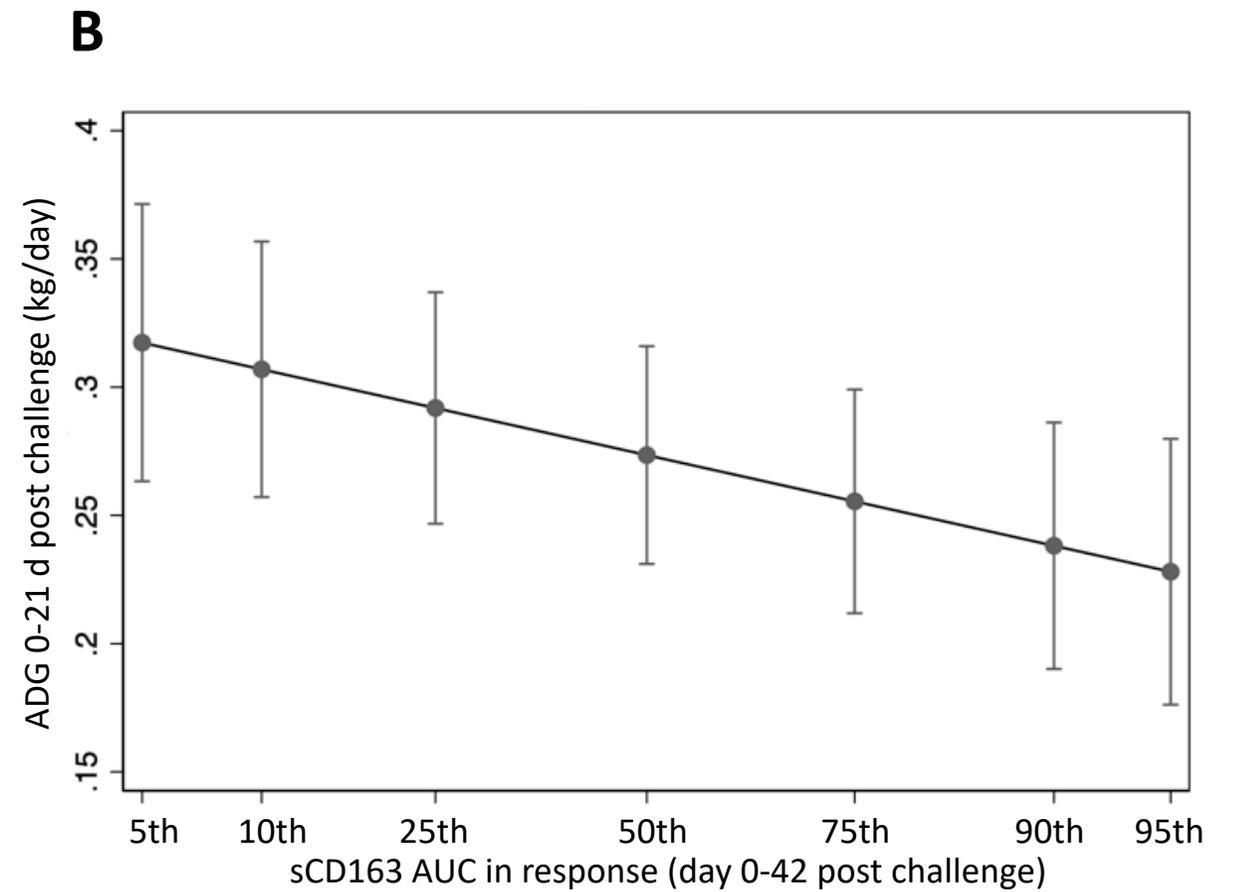
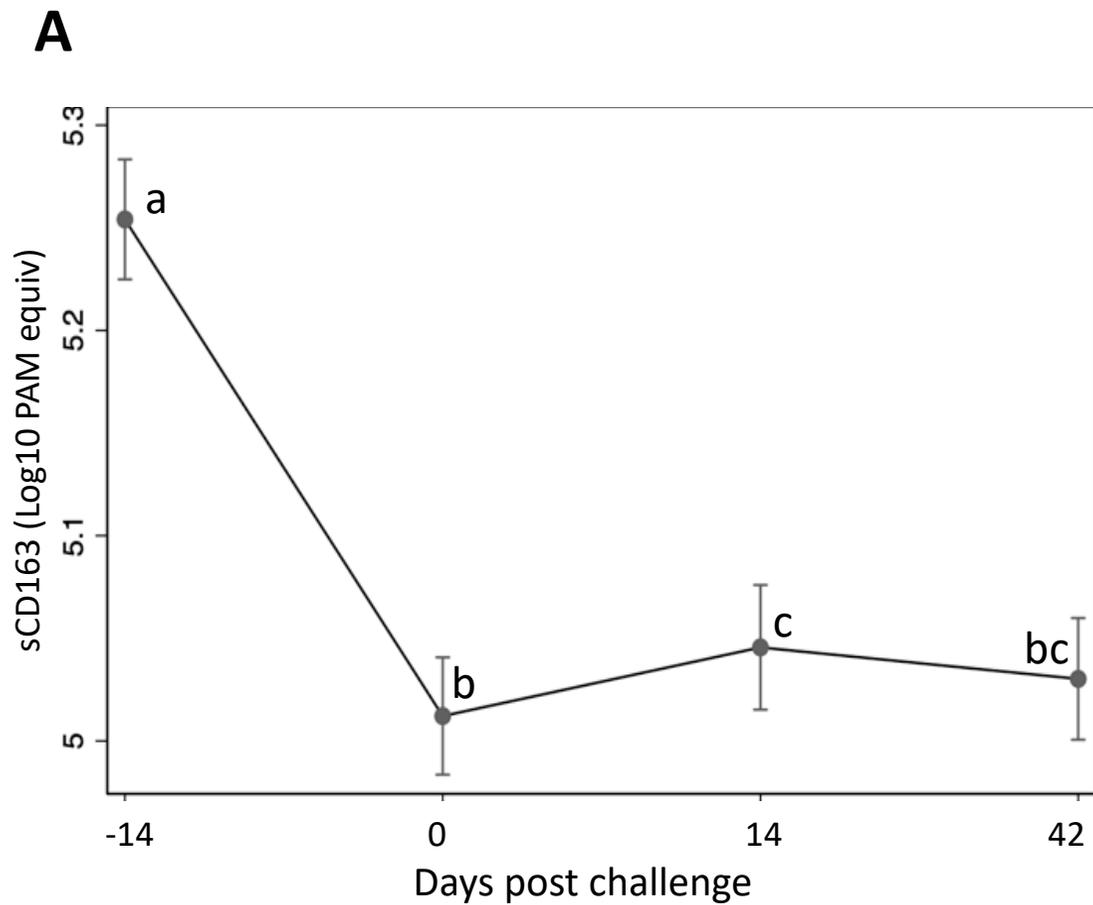
**Figure 1.** Soluble CD163 levels in serum from: (A) gestating females blocked by parity and (B) in nursery-finisher pigs blocked by age group (weeks) from three Ontario farms. Legend P=parity, PW=prewean



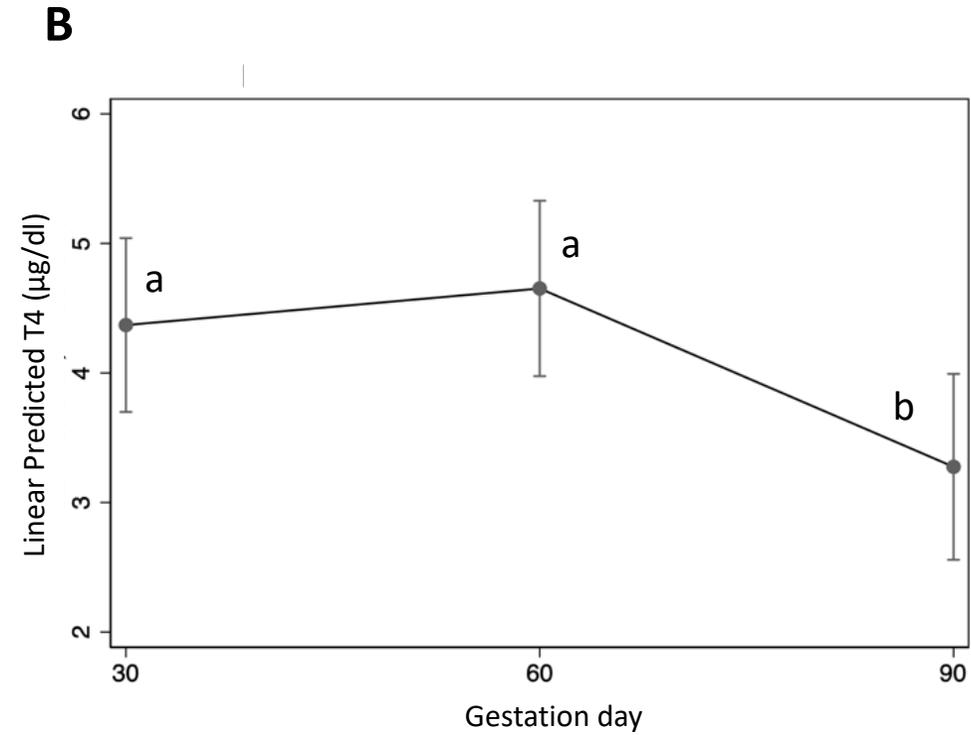
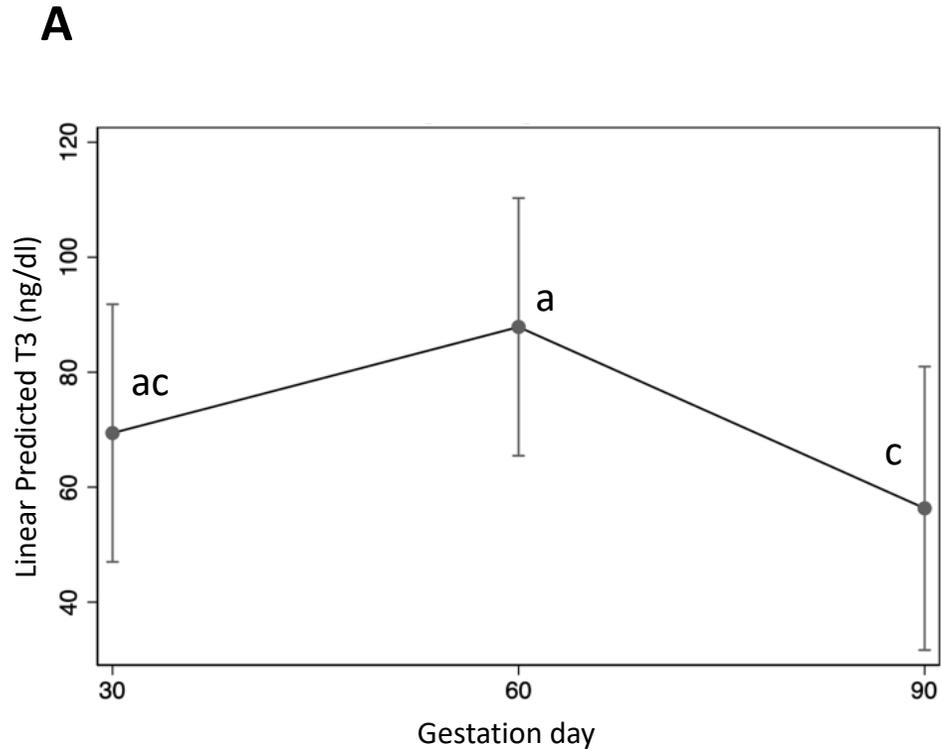
**Figure 2.** Margins plot of sCD163 serum concentration from 0 to 19 days post inoculation (dpi) in inoculated pregnant gilts by susceptibility group. Y-axis shows the linear prediction of sCD163 levels for inoculated gilts on each day post infection. Resilient/susceptible gilts were categorized using a z-score calculated from percent fetal viability and fetal viral load. Superscripts denote a significance of  $P < 0.05$  between dpi within groups. A) Includes only gilts with sCD163 detectable at all 4 timepoints. B) Include all animals with detectable values at 0-6 dpi. A mix-model accounting for batch and repeated measures within animal was used for the analysis. Error bars represent 95% confidence intervals.

**A****B****C**

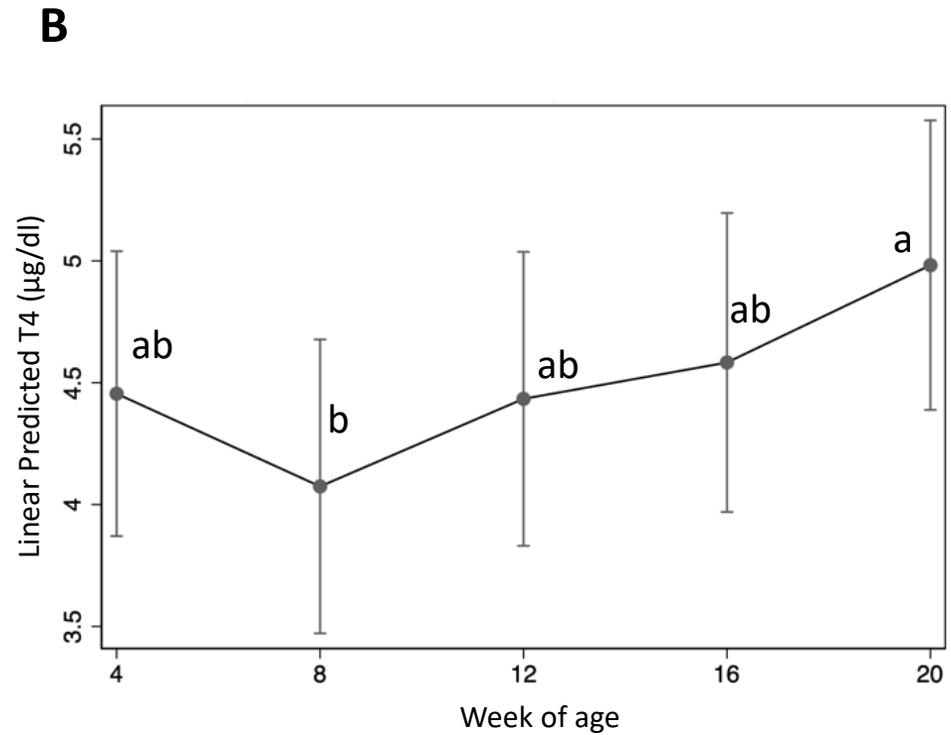
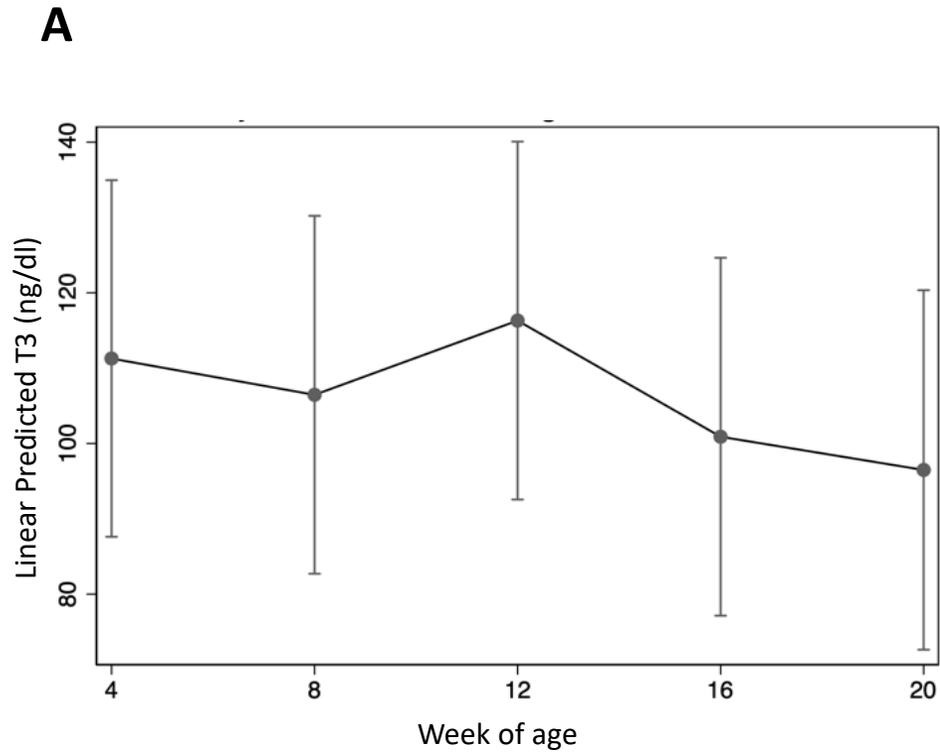
**Figure 3.** Margins plot of sCD163 levels at rest and in response to PRRVS infection in nursery pigs. A) Predicted mean sCD163 for all inoculated PHGC nursery pigs by day post infection (dpi); superscript denote significant differences. Mix-model accounted for clustering by batch and repeated measures within animal. B) Association of sCD163 levels at rest (0 dpi) with CD shedding response (AUC 0-11 dpi). The slope is indicative of a strong relationship ( $P < 0.0001$ ) between levels at 0 dpi and the amount of CD163 shed following PRRVS infection. Mix-model accounting for clustering by batch. C) Association of sCD163 levels at rest to weight gain to 42 dpi. The slope indicates that pigs with higher sCD163 pre-infection gained less weight over 21 days post-infection ( $P = 0.047$ ). Mix-model accounting for clustering by batch. Error bars represent 95% confidence intervals for all figures.



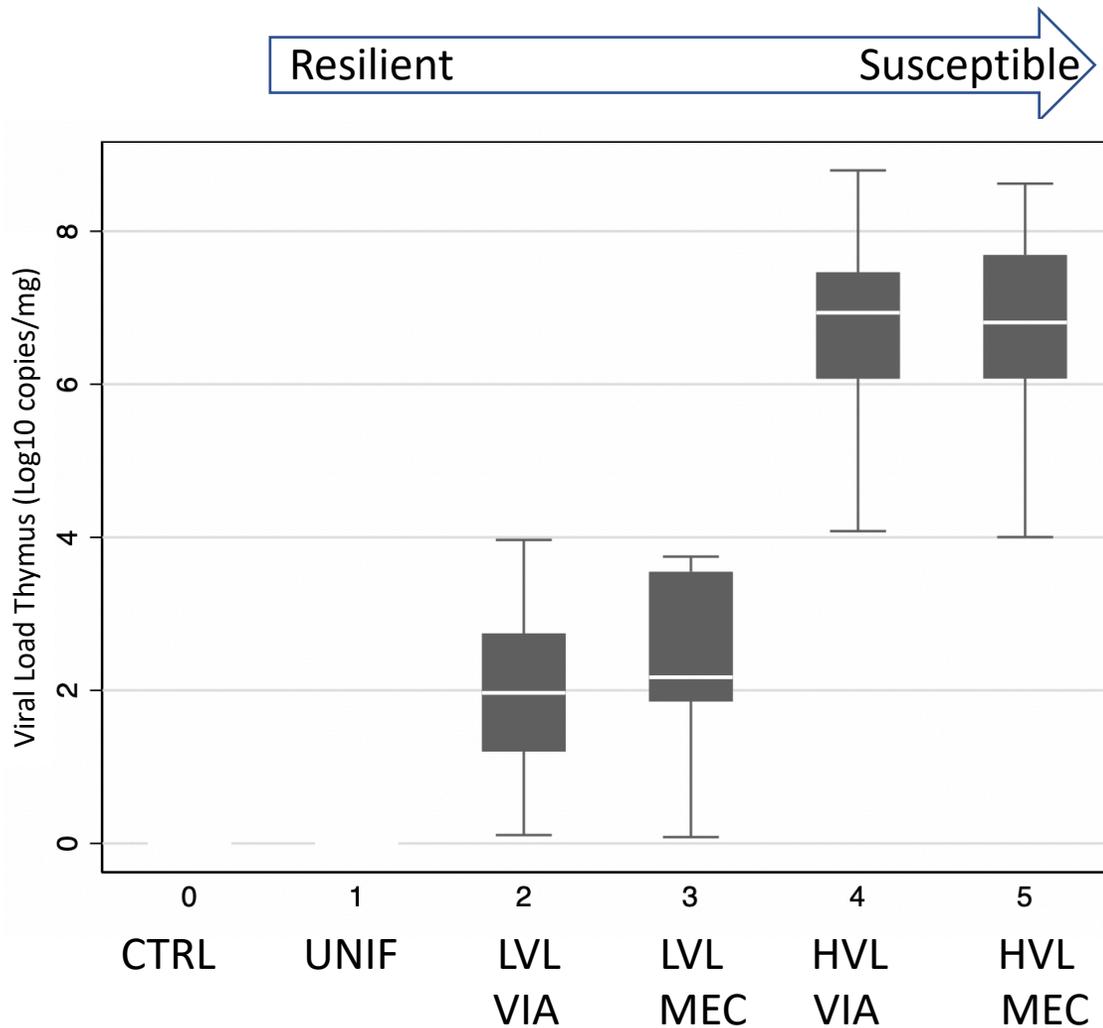
**Figure 4.** Margins plot of sCD163 levels in 225 pigs pre- and post-natural polymicrobial challenge. (A) Predicted mean sCD163 levels at each time point: D-14 and D0 are pre-challenge, D14 and D42 are post-challenge. The decrease in sCD163 levels pre-challenge is similar to that noted in healthy weaned pigs but the starting point may be higher due to the stress of recent transportation and regrouping. A mild shedding response was noted between 0-14 days. (B) Negative relationship between sCD163 response to challenge (day 0-42) and average daily gain immediately post challenge (day 0-21). Pigs with greater shedding response had lower ADG. Mix-model accounting for clustering by batch. Error bars represent 95% confidence intervals for all figures.



**Figure 5.** Margins plot of T3 (A) and T4 (B) concentration in serum of gestating females from three commercial farms in Ontario. Y-axis shows the linear prediction of T3 or T4. The X-axis shows gestation stage at time of bleeding. Thyroid hormone levels decrease in late gestation. A mix-model accounting for farm was used for the analysis. Error bars represent 95% confidence intervals. Superscripts represent statistical differences ( $P < 0.05$ ) across gestation day. Thyroid hormone levels did not differ by parity.

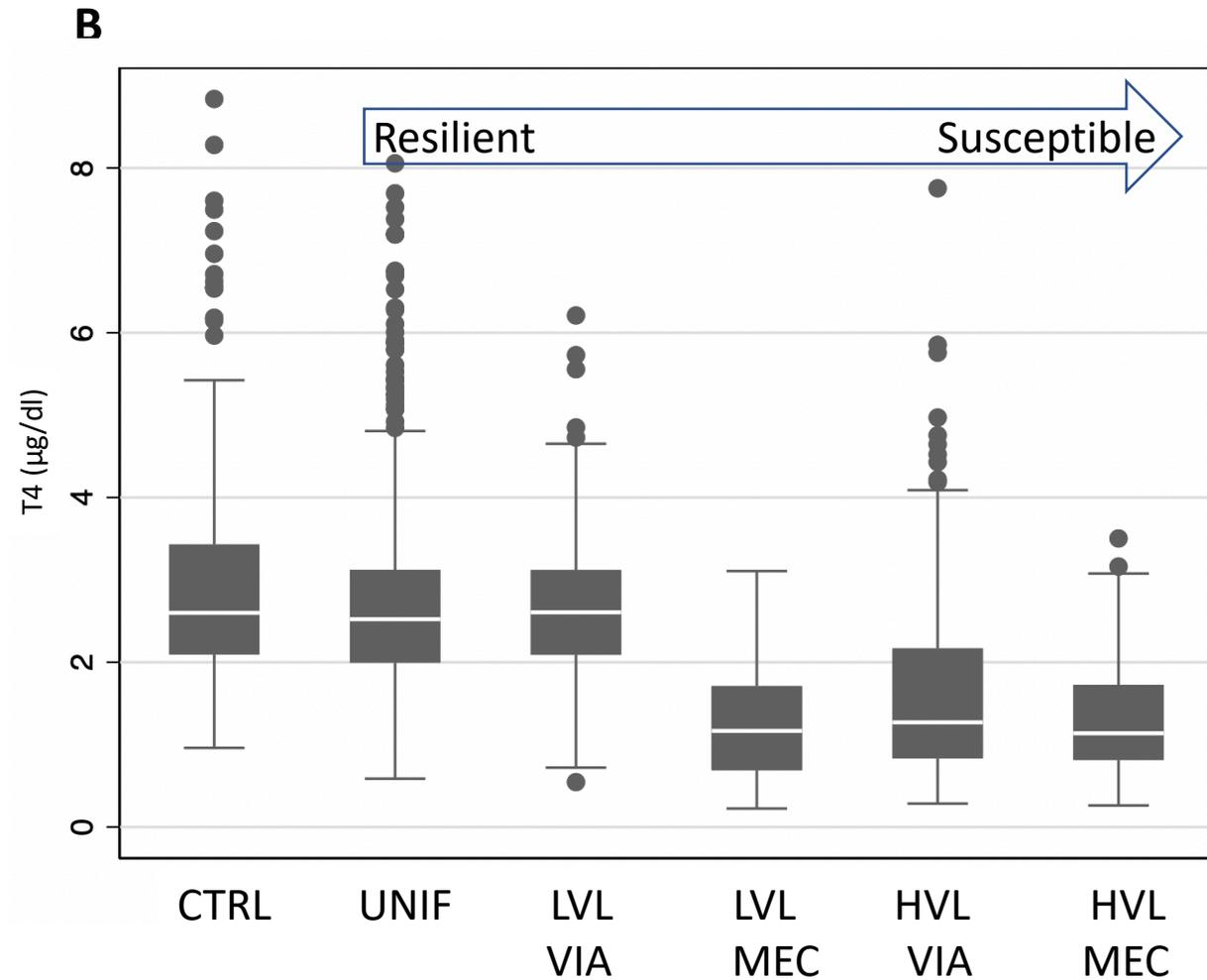
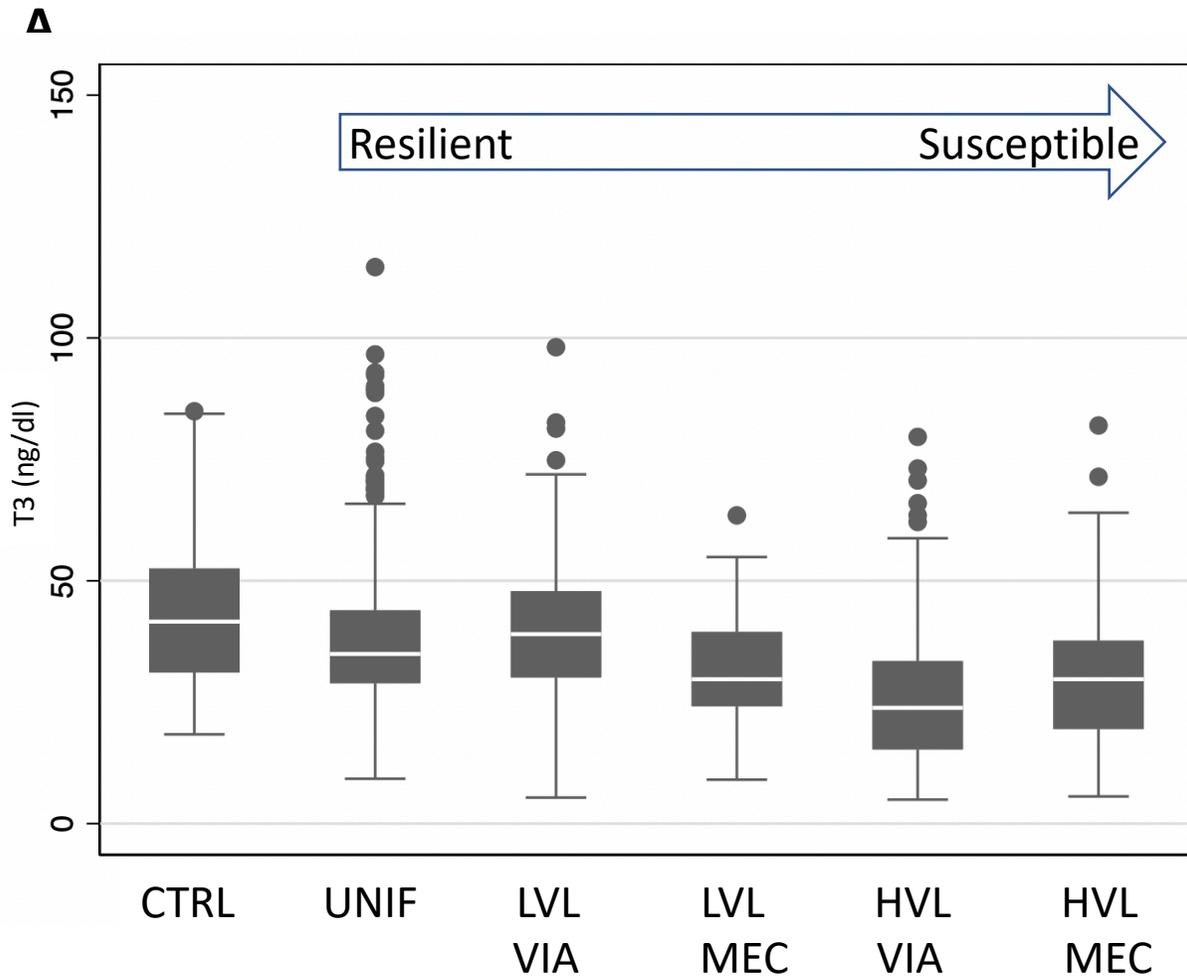


**Figure 6.** Margins plot of T3 (A) and T4 (B) concentration in serum of nursery-finisher pigs from three commercial farms in Ontario. Y-axis shows the linear prediction of T3 or T4. The X-axis shows age of pig in weeks. Thyroid hormone levels did not differ significantly except for T4 being lower in 8 versus 20 weeks. A mix-model accounting for farm was used for the analysis. Error bars represent 95% confidence intervals. Superscripts represent statistical differences ( $P < 0.05$ ) across age.

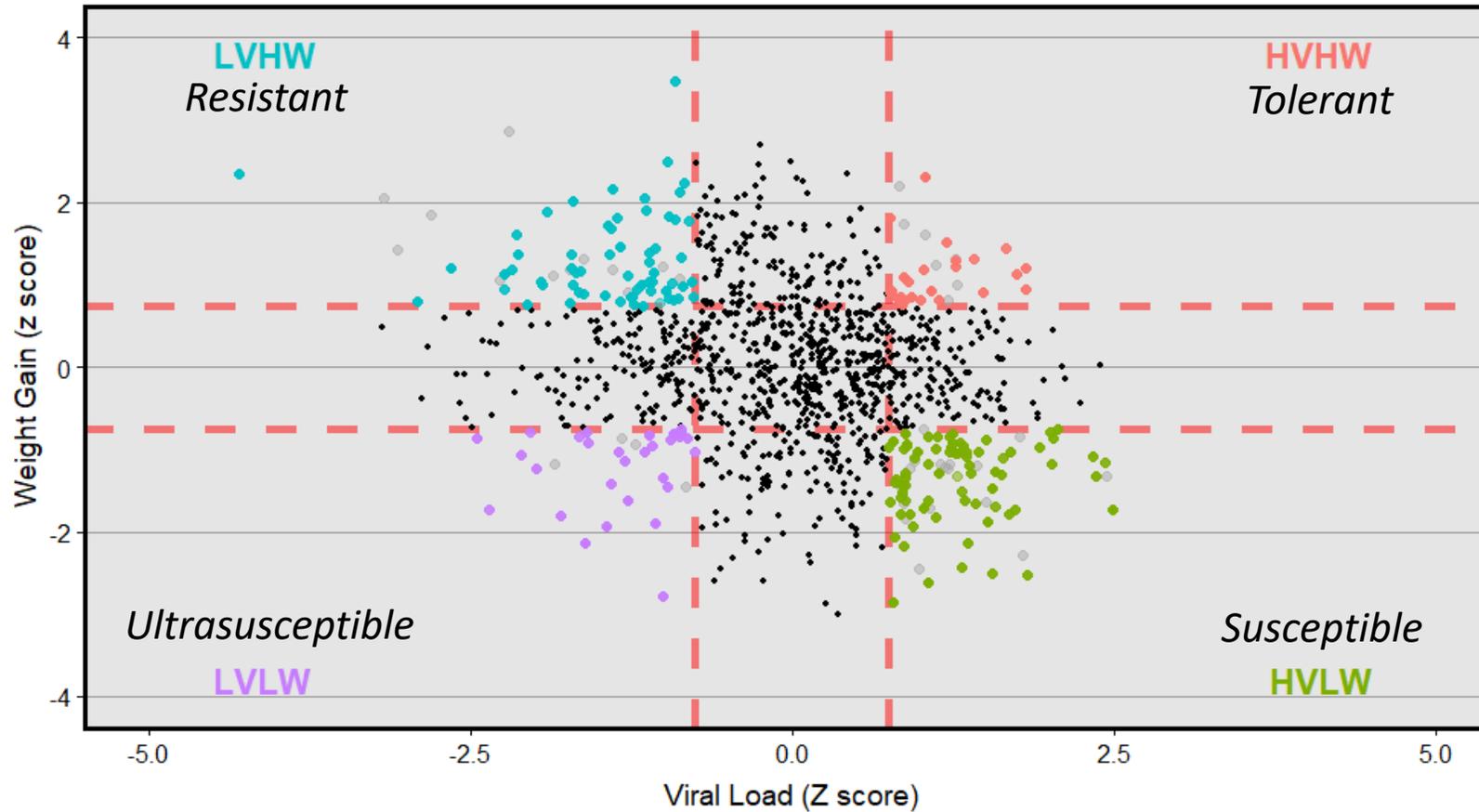


**Figure 7.** Levels of viral load in fetal thymus by fetal preservation and viral load group. Resilient fetuses viable with low or no viral load. Susceptible fetuses have high viral load and/or are meconium stained. Combined analyses shown including fetuses bled at 12 and 21 days post maternal inoculation (dpi). Horizontal lines represent group median, box represents 25<sup>th</sup> to 75<sup>th</sup> percentiles, whiskers represent upper and lower 25<sup>th</sup> percentile

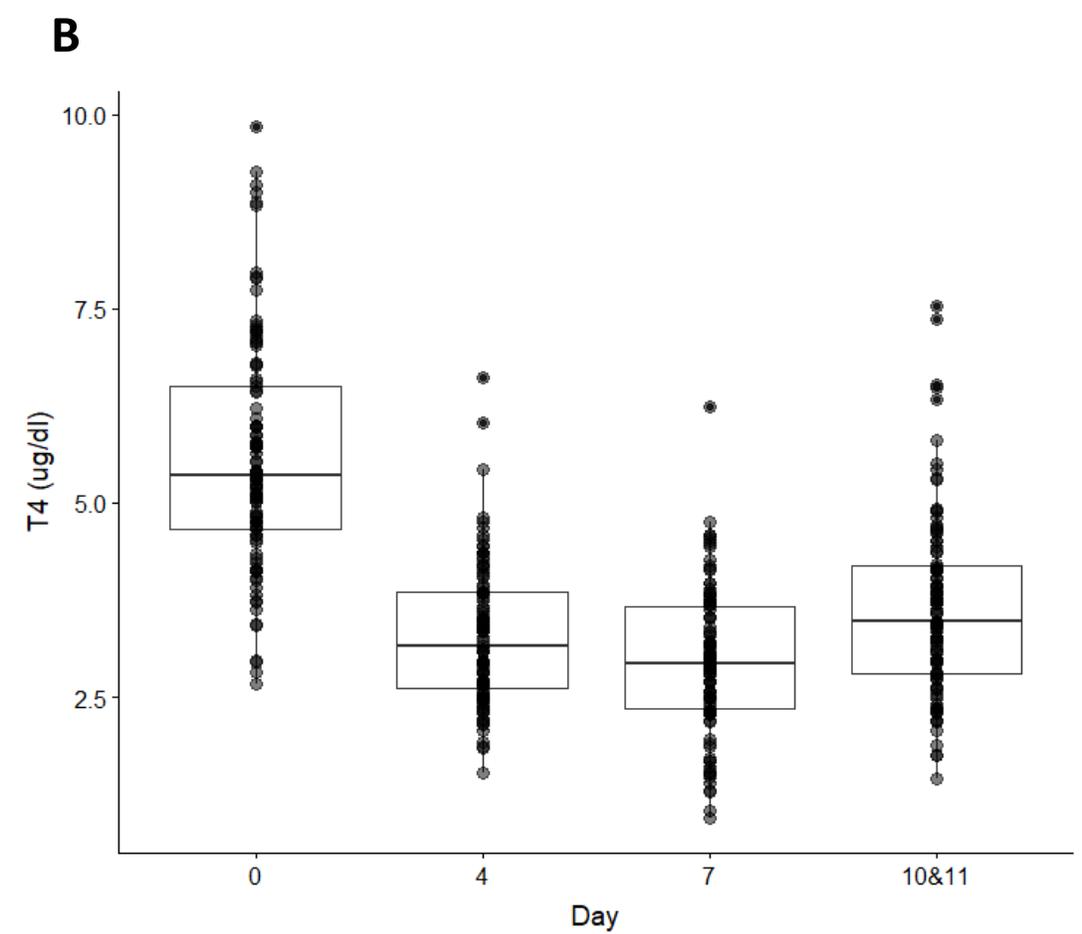
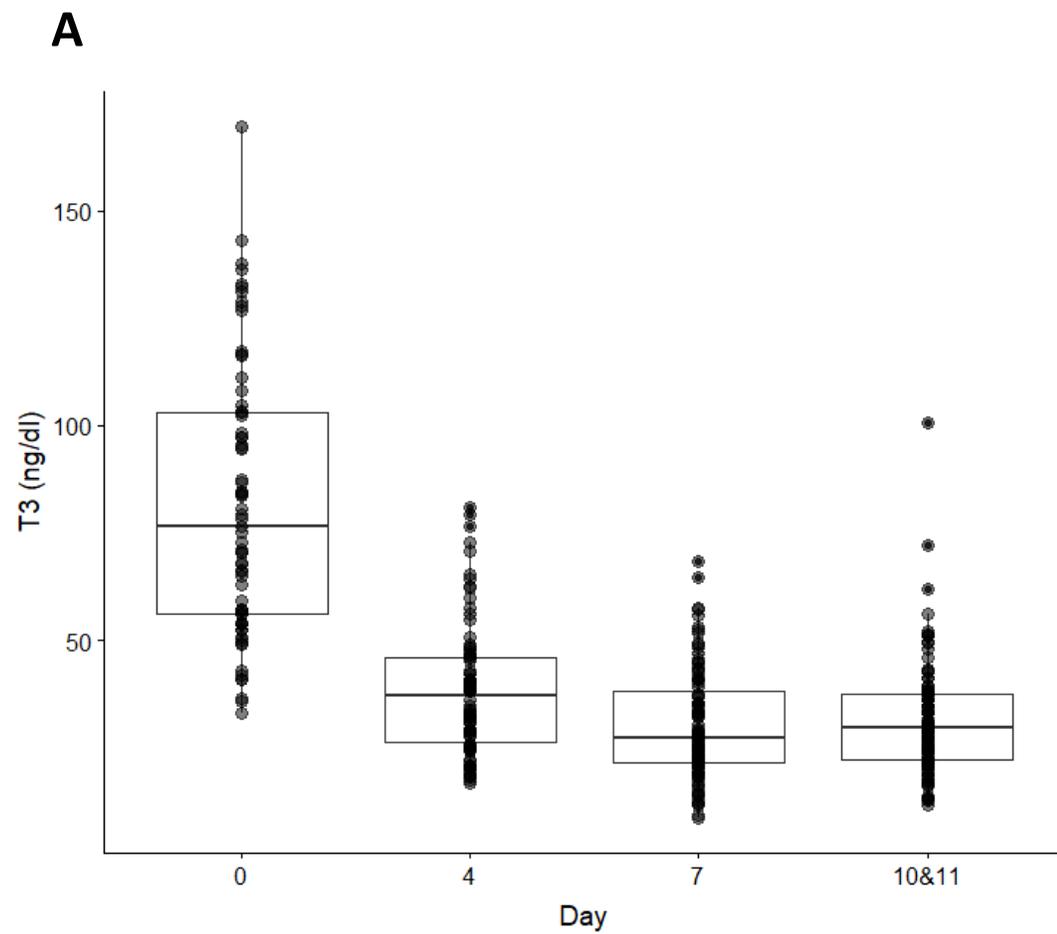
CTRL = fetuses of non-inoculated gilts  
 UNIF = virus negative fetuses from inoculated gilts  
 LVL = fetuses with low viral load in thymus ( $\leq 4.0$  Log10)  
 HVL = fetuses with high viral load in thymus ( $> 4.0$  Log10)  
 MEC = fetuses with meconium staining of skin



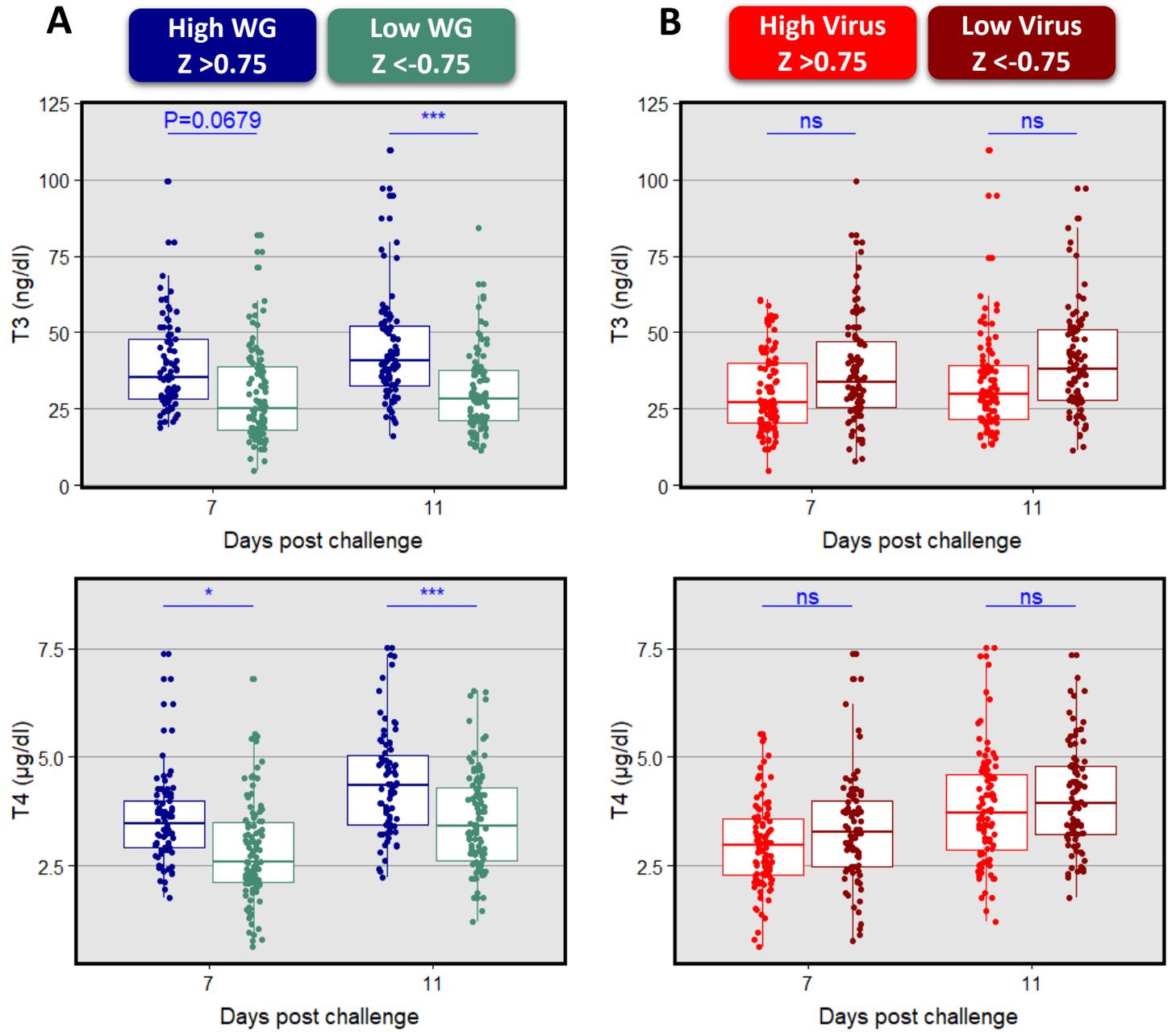
**Figure 8.** Levels of T3 (A) and T4 (B) in fetal serum by fetal preservation and viral load group. Resilient fetuses are viable with low or no viral load. Susceptible fetuses have high viral load and/or are meconium stained. Combined analyses shown including fetuses bled at 12 and 21 days post maternal inoculation (dpi) but trends are similar at each dpi. Horizontal lines represent group median, box represents 25<sup>th</sup> to 75<sup>th</sup> percentiles, whiskers represent upper and lower 25<sup>th</sup> percentile, dots represent potential outliers.



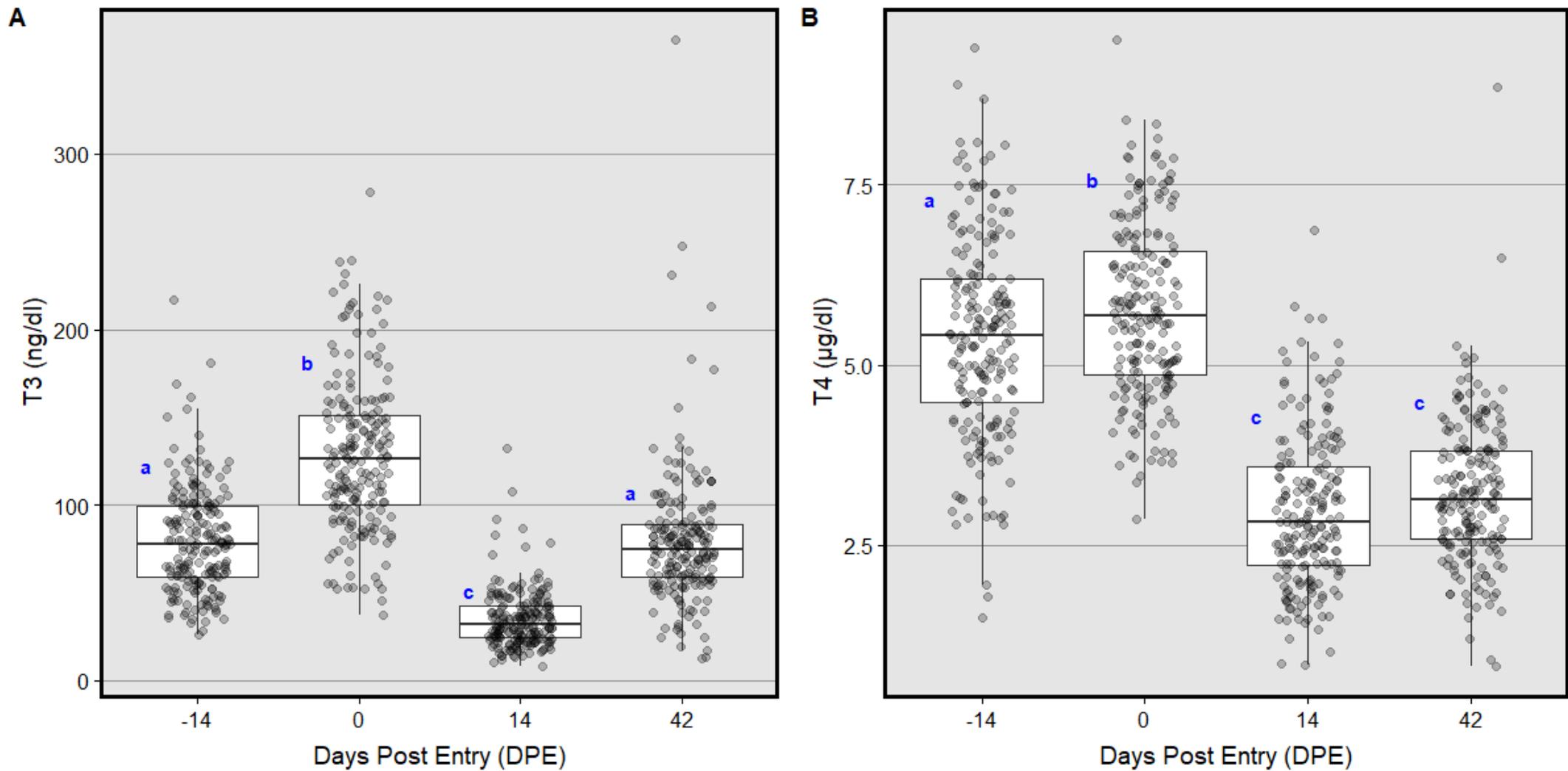
**Figure 9.** Levels of T3 (A) and T4 (B) in sera of nursery pigs following PRRSV challenge from six PHGC trials. Pigs for testing were identified using a 2x2 design targeting the most susceptible and resilient pigs based on weight gain (W) and viral load (V) following challenge: tolerant (HVHW), susceptible (HVLW), resilient (LVHW) and ultrasusceptible (LVLW)



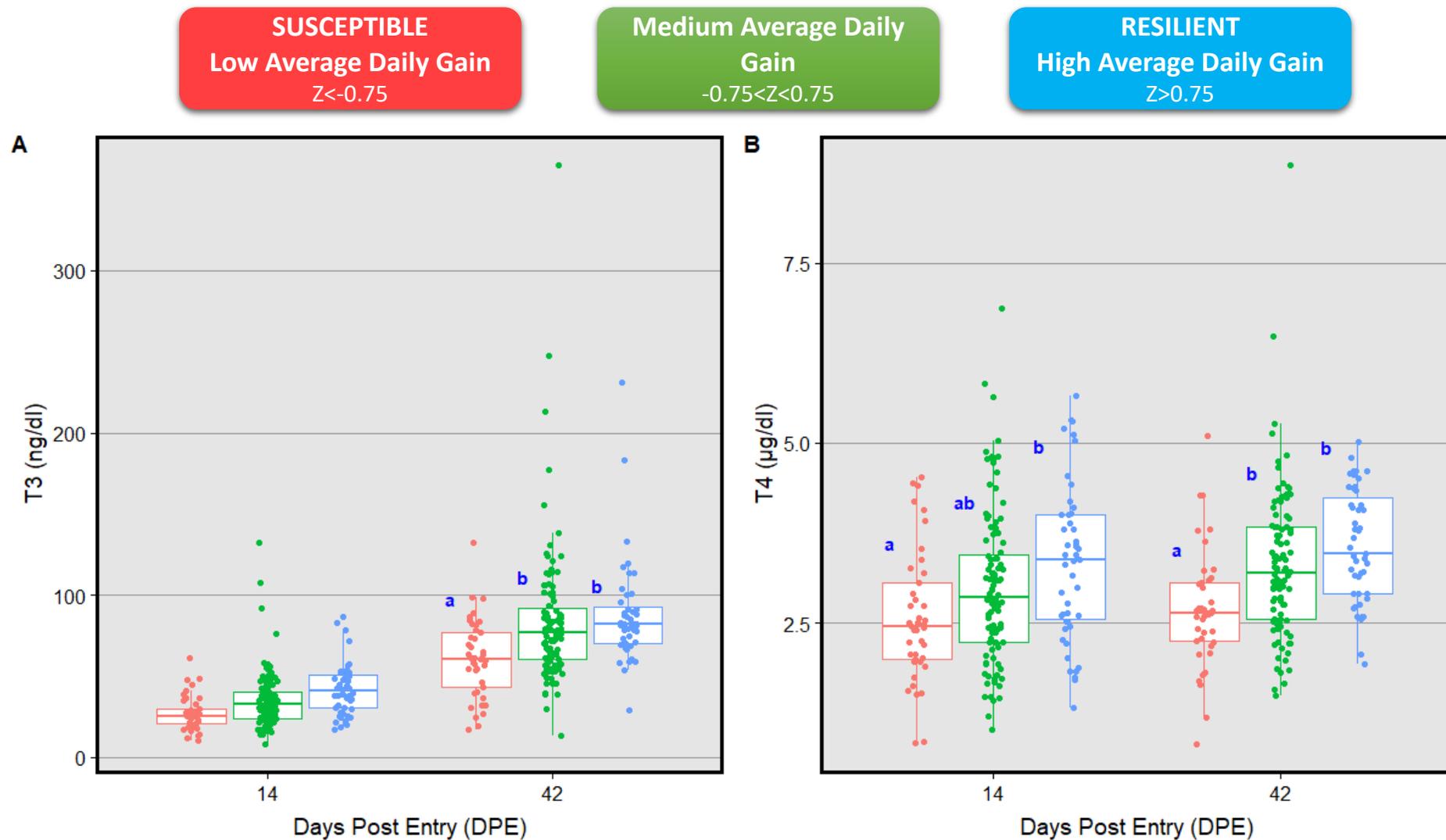
**Figure 10.** Levels of T3 (A) and T4 (B) in sera of nursery pigs following PRRSV challenge from six PHGC trials. Combined results of pigs from all susceptible and resilient groups are shown. Both T3 and T4 are suppressed beginning 4 days post inoculation (dpi) and remained suppressed at 11 dpi. Horizontal lines represent group median, box represents 25<sup>th</sup> to 75<sup>th</sup> percentiles, whiskers represent upper and lower 25<sup>th</sup> percentile. Dots represent data from individual pigs.



**Figure 11.** Levels of T3 (top) and T4 (bottom) in association with weight gain (A) and viral load in sera (B) of susceptible and resilient nursery pigs following PRRSV challenge from six PHGC trials. A significant decrease in T3 and T4 are observed at 7 and 11 DPI in low weight gain pigs (A). By contrast, T3 and T4 levels were non-significantly increased in low viral load pigs (B). Horizontal lines represent group median, box represents 25<sup>th</sup> to 75<sup>th</sup> percentiles, whiskers represent upper and lower 25<sup>th</sup> percentile. Dots represent data from individual pigs.



**Figure 12.** Levels of T3 (A) and T4 (B) in sera of nursery-finisher pigs following natural polymicrobial challenge from three batches of pigs sourced from Ontario farms. Combined results of pigs from all susceptible and resilient groups are shown. Both T3 and T4 are suppressed beginning 14 days post entry into the challenge environment. T4 levels remained depressed at 42 days post challenge whereas T3 levels show evidence of a rebound. Horizontal lines represent group median, box represents 25<sup>th</sup> to 75<sup>th</sup> percentiles, whiskers represent upper and lower 25<sup>th</sup> percentile. Dots represent data from individual pigs.



**Figure 13.** Levels of T3 (A) and T4 (B) in sera of nursery-finisher pigs following natural polymicrobial challenge by resilience group. Resilience was categorized by calculating the within-batch Z-scores for ADG from entry to 61 days post challenge using a cutoff of 0.75 SD: susceptible = less than 0.75 SD, resilient greater than 0.75 SD. Both T3 and T4 are associated with ADG with levels of both hormones greater in pigs with high versus low average daily gain during the peak period of challenge. Horizontal lines represent group median, box represents 25<sup>th</sup> to 75<sup>th</sup> percentiles, whiskers represent upper and lower 25<sup>th</sup> percentile. Dots represent data from individual pigs.