

# 11. Follicular heterogeneity of sows at weaning in relation to within-litter variation in piglet birth weight

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In pig husbandry, relations have been found between lactational body weight losses, subsequent follicle development and birth weight uniformity, and these relations seem to be mediated by changes in insulin-like-growth factor (IGF-1) levels during lactation. We aim to investigate follicle size and follicular and serum IGF-1 levels and relate these to lactational body weight losses. In total 31 multiparous GY× DL crossbred sows (parity  $4.7 \pm 2.5$ ), equally distributed over parity, lactation weight loss and weaned litter size, were slaughtered at day 0 or day 4 after weaning. Blood was collected to obtain plasma and serum samples. Ovaries were photographed for follicle size determination (5 largest on each ovary) and follicular fluid was collected from the 15 largest follicles on one ovary, and stored separately for follicles 1-5 (Large), 6-10 (Medium) and 11-15 (Small). Sow body weight losses during lactation were assessed and IGF-1 levels were determined in the Large follicular fluid pool.

Parity 2-3 (n=15) vs. 4-10 (n=16) differed in body weight at parturition ( $269 \pm 5$  vs.  $228 \pm 5$  kg;  $P < 0.0001$ ) and backfat loss ( $5.1 \pm 0.52$  vs.  $3.4 \pm 0.59$  mm;  $P = 0.03$ ) but not body weight loss ( $9.8 \pm 3.1$  vs.  $7.0 \pm 3.0$  kg,  $P = 0.53$ ;  $4.0 \pm 1.2$  vs.  $2.6 \pm 1.2$  %,  $P = 0.42$ ). Average follicle size of the Large follicles increased from day 0 to 4 ( $0.30 \pm 0.03$  vs.  $0.65 \pm 0.03$ ;  $P < 0.0001$ ). In the Large follicles, average IGF-1 levels increased from day 0 to day 4 ( $153 \pm 44$  vs.  $217 \pm 32$   $\mu$ l;  $P = 0.0015$ ). Not at day 0, but at day 4, the size of the Large follicles was negatively related to follicular fluid IGF-1 levels ( $r = -0.58$ ;  $P = 0.049$ ). The percentage of body weight loss did not affect the size of the Large, Medium and Small follicles on day 0 and 4 and was also not related to follicular IGF-1 levels in the Large follicles at day 0 ( $P = 0.20$ ) or at day 4 ( $P = 0.89$ ). IGF-1 levels of serum and of the Small follicle fluid pools will become available, but so far, there was no major role for IGF-1 in post-weaning follicle development in multiparous sows, which is in contrast to young sows that showed a larger body weight loss.