

translocation and the boar carrying the rep(10;13) were 6.5, 6.0, and 6.0, respectively, >40% less than the herd average (11.4). Moreover, breeding records from the 2 rcp(1;6) boars revealed an incidence of repeat breeding and percentage stillborn piglets of 28%, 38% and 0.3%, 0.6%, respectively. In brief, these two reciprocal translocations, which have not been previously reported, were responsible for a substantial decrease in prolificacy of the carrier animals and may be widely propagated through their offspring. Further analysis is needed to determine the origin of the translocation (acquired or *de novo*) and the reciprocal nature of the translocation should be confirmed by more accurate techniques such as FISH (fluorescence *in situ* hybridization).

DOI: 10.1016/j.theriogenology.2008.06.040

### Effects of dietary vitamin supplementation and semen collection frequency on hormonal profile during ejaculation in the boar

Isabelle Audet<sup>1</sup>, Nathalie Bérubé<sup>2</sup>, Janice Bailey<sup>2</sup>, Jean-Paul Laforest<sup>2</sup>, J. Jacques Matte<sup>1</sup>

<sup>1</sup>Agriculture and Agri-Food Canada, Sherbrooke, QC, Canada

<sup>2</sup>Department of Animal Science, Laval University, Quebec City, QC, Canada

To better assess the interactions between husbandry factors and endocrinology of the boar during ejaculation, 40 boars were randomly allocated to two dietary treatments: basal diet corresponding to the industry average (C), and basal diet supplemented with extra vitamins (V); 5× higher than C for vitamin D; 3× for vitamins A, E, and K; and 10× for vitamins B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub>, B<sub>5</sub>, B<sub>6</sub>, B<sub>9</sub>, and B<sub>12</sub>. Within each dietary treatment, boars were submitted to two regimens of semen collection over 3 months preceding hormonal evaluation: three times per 2 weeks (3/2) or three times per 1 week (3/1). At the end of the semen collection regimen, boars were cannulated for repeated blood samplings before and during ejaculation. Luteinizing hormone (LH), follicle stimulating hormone (FSH), 17(-estradiol (E<sub>2</sub>) and testosterone (T) were measured in blood plasma and seminal fluid. Two types of hormonal response are presented. The first one, before ejaculation (rest period) corresponds to the mean of the four samples taken at 15 min intervals, compared to the samples at the onset of the ejaculation (Quarter 1). The second one corresponds to the hormonal variations during ejaculation, divided in four quarters of equal time. At the onset of ejaculation, plasma E<sub>2</sub> was higher than during the rest period ( $P < 0.01$ ). This increase tended to be more pronounced

for V than C boars ( $P < 0.1$ ) and tended also to be more pronounced in 3/1 than 3/2 boars ( $P < 0.06$ ). Plasma T increased from rest period to the onset of the ejaculation for V boars, whereas it decreased for C boars (diet × period,  $P < 0.05$ ). Plasma FSH tended to increase from the rest period to the onset of ejaculation in 3/2 boars, whereas it tended to decrease in 3/1 boars (collection frequency × period,  $P < 0.06$ ). During ejaculation, vitamin supplement and collection frequency did not influence the concentration and total amount of hormones in seminal fluid ( $P > 0.24$ ). Plasma LH increased linearly over the duration of ejaculation ( $P < 0.01$ ). Plasma T decreased between Quarter 1 and Quarter 2 of ejaculation, and increased thereafter ( $P < 0.01$ ). Although plasma E<sub>2</sub> was not influenced by treatments ( $P > 0.31$ ), there was a correlation between plasma E<sub>2</sub> and T concentrations ( $r = 0.62$ ,  $P < 0.01$ ). At the onset of ejaculation (Quarter 1), plasma FSH was higher in 3/2 than 3/1 boars ( $P < 0.05$ ), but this effect tended to diminish ( $P < 0.08$ ) during ejaculation. Plasma FSH during the rest period and ejaculation was negatively correlated with the sperm production ( $r = -0.60$ ,  $P < 0.01$ ) and with testicular weight ( $r = -0.50$ ,  $P < 0.01$ ). Testicular weight was positively correlated with testicular volume ( $r = 0.87$ ,  $P < 0.01$ ) and with the sperm production ( $r = 0.63$ ,  $p < 0.01$ ). In conclusion, it appears that husbandry factors such as a supplement of dietary vitamins and semen collection regimen in breeding boars can influence hormonal secretion and/or release during ejaculation. The correlation between FSH and testicular size or sperm production merits further investigation.

DOI: 10.1016/j.theriogenology.2008.06.041

### Effects of dietary vitamin supplementation and semen collection frequency on reproductive performance and semen quality in boars

Isabelle Audet<sup>1</sup>, Nathalie Bérubé<sup>2</sup>, Janice Bailey<sup>2</sup>, Jean-Paul Laforest<sup>2</sup>, J. Jacques Matte<sup>1</sup>

<sup>1</sup>Agriculture and Agri-Food Canada, Sherbrooke, QC, Canada

<sup>2</sup>Department of Animal Science, Laval University, Quebec City, QC, Canada

The objective of the present study was to determine the effects of increasing the daily provision of dietary fat- and water-soluble vitamins on vitamin metabolic status and semen characteristics of boars under controlled and commercial conditions, and to evaluate the efficiency of this vitamin supplement to cope with