

Functional studies dealing with insulin and  $\beta$ -adrenergic receptors were hampered by huge individual variations and additional studies need to be performed.

Enzyme studies revealed that 5'-nucleotidase (EC 3.1.3.5) activity did not seem to be modified by diet and castration but was always higher in S than in P ( $\sim 3$ -fold). Adenylate cyclase (EC 4.6.1.1) stimulation by various effectors increased when animals were fed the sunflower diet. Dietary effect was much more pronounced when stimulation was nearer the catalytic subunit. There was no significant tissue effect with the control diet, but stimulation became higher in P than in S with the sunflower diet.

**Genetic relationships between fat androstenone level in males and development of male and female genital tract in pigs.** P. Sellier<sup>1</sup>, M. Bonneau<sup>2</sup> and J. Gruand<sup>3</sup> (<sup>1</sup> INRA, Station de Génétique quantitative et appliquée, 78350 Jouy-en-Josas, <sup>2</sup> INRA, Station de Recherches porcines, Saint-Gilles, 35590 L'Hermitage, and <sup>3</sup> INRA, Station Expérimentale de Sélection Porcine, 86480 Rouille, France)

A single-generation selection experiment was undertaken to assess to what extent fat androstenone level in boars can be reduced by breeding while maintaining normal sexual development in boars and gilts. In Large White boars of around 114 kg live weight, the androstenone level was determined on a biopsy of fat taken in the neck region and testes size was estimated by an index combining live measurements of testes width and scrotal area. Three groups of boars (4 per group) were kept for breeding: (1) group S ('small') exhibiting low fat androstenone level (intensity of selection  $i = -1.50$  units of phenotypic standard deviation) and small testes size ( $i = -2.74$ ); group L ('large') exhibiting low fat androstenone level ( $i = -1.32$ ) and large testes size ( $i = +0.50$ ), and (3) group C ('control'). Records for fat androstenone level and testes size at 104 kg live weight and development of genital tract at slaughter (124 kg live weight) were collected on 225 male

offspring from these boars. In addition, proportion of puberal gilts and development of genital tract at slaughter (124 kg live weight) were recorded on 187 female offspring. The response to selection 'against' fat androstenone level was significant ( $P < 0.01$ ) in both groups S and L. Of particular interest is that a normal development of testes and bulbo-urethral glands was preserved in offspring from L sires, at least at 124 kg live weight, though they exhibited a large decrease ( $P < 0.01$ ) in fat androstenone level at the usual slaughter weight of 104 kg. However, a strong delay in puberty ( $P < 0.01$ ) was found in gilts from both groups S and L: only 35–37% of those gilts had reached puberty at 124 kg live weight, as compared to 79% in the 'control' group. Realized genetic parameters for fat androstenone level and testes size were derived from 'index-in-retrospect' coefficients and selection responses in S and L groups. Estimates of realized heritability were 0.88 for fat androstenone level and 0.49 for testes size. The estimate of realized genetic correlation between the two traits was positive (around 0.55), indicating that decreasing fat androstenone content and increasing testes size are genetically antagonistic.

**Influence of the degree of lipid unsaturation on sensory properties of minced meat products.** C. Touraille and J.P. Girard (Station de recherches sur la viande, INRA, Theix 63122 Ceyrat, France)

Large White pigs were fed with 4 different diets based on: 1) barley; 2) barley + copra; 3) maize; 4) maize + maize oil, in order to induce various degrees of lipid unsaturation in fat deposits. The proportion of saturated and unsaturated fatty acids were similar in the diets and in backfat deposits.

Diets had a large effect on the degree of fatty acid unsaturation; for example C18:2 content varied from 8 to 30%, which is within the range usually noted in slaughter houses.

Two minced products were prepared using the backfat: 1) a cooked product: hamburgers; 2) a dried product: dry sausages.