Blood markers (Phi and Pgd) and halothane sensitivity in the *French Landrace* pig breed

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A total of 1000 *French Landrace* pigs (758 males and 242 females) from central stations or breeding farms were given a 5-minute halothane test at 25-30 kg liveweight and a blood sample was collected. Each animal was typed with regard to the A and B electrophoretic variants of two red cell enzymes, phosphohexose isomerase and 6-phosphogluconate dehydrogenase, controlled by loci (Phi and Pgd respectively) closely linked to the halothane locus (Hal). Incidence of positive halothane reaction was 8.1 p. 100. Gene frequency estimates were 0.287 for the recessive allele Hal^S, responsible for halothane sensitivity (assuming complete penetrance), 0.745 for the Phi^B allele, and 0.441 for the Pgd^B allele. A preferential association of Hal^S, Phi^B and Pgd^B on the chromosome was demonstrated : the 2-locus linkage disequilibrium coefficients (D) were 0.063 ± 0.005 for Hal and Phi, 0.084 ± 0.010 for Hal and Pgd, and 0.023 ± 0.007 for Phi and Pgd, with D differing from zero at the 0.1 p. 100 level for the three pairs of loci. The probabilities (P) that halothane-negative (HN) pigs were not carriers of Hal^S, depending on their blood types [Phi, Pdg] were derived from estimated 2- and 3-locus haplotype frequencies. The Phi-Pgd blood typing allowed to detect among HN pigs around 7 p. 100 pigs ([Phi^A, any Pgd whatever]) for which P was higher than 0.89, and around 14 p. 100 pigs ([Phi^{AB}, Pgd^A]) for which P ranged around 0.78. Use of blood typing for Phi and Pgd systems as an aid for selection against Hal^S in the *French Landrace* breed is briefly discussed.

Relationships between a genetic marker — the major histocompatibility complex — and sow prolificacy and piglet mortality

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The frequency of the different haplotypes of the pig major histocompatibility complex (SLA) varies according to the populations considered. Because of the frequency of some haplotypes in *Large White* hyperprolific sows, we studied the relationship between SLA and sow prolificacy, on the one hand, and piglet mortality on the other hand. We determined the SLA haplotypes of sows belonging to two consecutive generations of a *Large White*