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Genetic determinism of sexual development and boar taint in Pietrain and Pietrain × Large White pigs

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The European pig industry is engaged in a voluntary abandonment of surgical castration of male piglets by 2018. A condition of this abandonment is to solve different problems related to breeding boars, especially meat quality. One of the best ways is that of genetics, including genomic selection. A resource population has been implemented using French Pietrain pigs raised in a control animal testing station. About 1500 Pietrain type or cross-type Pietrain × Large White boars were raised and slaughtered to determine the characteristics of sexual development, body composition and above all meat quality traits. Plasma testosterone concentration differed from one genetic type to another, but the differences were generally small. This concentration was not affected by the batch or by the weight of the animals or by their age at measurement. Androstenone content in backfat was not affected by the batch but the average almost doubled from one genetic type to another, the highest levels being observed both in one Pietrain type and in one crossbred type. Androstenone content increased with slaughter weight and plasma testosterone concentration. The effect of slaughter age depended on the genetic type. Skatole content in backfat was little affected by the concentration of testosterone, but varied from one batch to another, from one genetic type to another and decreased with age at slaughter. Genetic parameters were estimated in the different populations. They were estimated within the range of values usually observed for these traits.