

# Fertility Markers in Boar Semen

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The ability to determine the relative fertility of boars at an early age or before their use in a breeding program would be economically beneficial to the pork industry. Evaluation of semen quality is currently based on morphological and qualitative observations, however is not predictive of fertility. Seminal plasma proteins as indicators of fertility have been reported in many livestock species (cow, horse), however no marker to date has been investigated and validated in the boar.

Our current study evaluated two boars who differed in fertility, and whose relative fertility was related to factors related to their seminal plasma. Seminal plasma proteins were separated on 2D SDS-PAGE gels by electrophoresis to create a two-dimensional map of all of the proteins present in the gels. The gels were compared and analyzed using image analysis software (Progenesis, Non-Linear Dynamics). Analysis of the seminal plasma protein profiles, in parallel with in vitro fertilization procedures, demonstrated differences in the ejaculates evaluated from these boars. IGF-1 concentrations in seminal plasma were also tested, however no differences were found and there was no relationship to fertility. This model is expected to provide insight into seminal plasma protein markers that are related to boar fertility.

**Implications:** The identification of fertility markers in seminal plasma of boars may lead to the development of a screening test, predictive of fertility for boars before incorporation into a breeding program.