

Position Statement on Gene Editing

Topigs Norsvin continually evaluates new technologies and their potential applications in pig breeding. One such technology is gene editing. While the company recognizes the potential benefits of gene editing and uses it to address research questions, it does not currently see a need to apply gene editing in its commercial breeding program.

This position may be reconsidered if a genetic variant is identified for a relevant trait which does not seriously, negatively impact other traits, cannot be disseminated through traditional breeding, and if there is clear demand for animals with the edited genotype. At present, most proposed applications of gene editing in livestock focus on health and welfare traits - areas where traditional breeding has already proven highly effective. Topigs Norsvin believes that leveraging natural genetic variation in health and welfare traits is a more sustainable and long-term solution to improving these traits.

A Balanced Approach to Breeding

Many proposed applications of gene editing in animal breeding aim to improve animal health and well-being, which are traits of both societal and economic importance. While gene editing offers opportunities to introduce novel genetic variation, it is not the only genetic solution for improving these high impact traits. Research, including studies conducted by Topigs Norsvin, provides evidence of substantial natural genetic variation in health and welfare traits. Traditional breeding methods can effectively promote beneficial natural mutations without relying on gene editing.

For over 25 years, Topigs Norsvin has employed this strategy as a core element of its breeding program. It involves collecting commercial performance data, which reflects differences in performance under challenging conditions, including exposure to various bacterial and viral challenges. Using these data in genetic evaluations has resulted in direct selection for enhanced performance under commercial conditions, as well as indirect selection for enhanced robustness against disease challenge. Ongoing efforts also focus on specific robustness traits, such as conformation, congenital defects, piglet vitality, and survival during different phases of production.

In the past decade, Topigs Norsvin has expanded selection for enhanced robustness to include partial resistance to Porcine Reproductive and Respiratory Syndrome and variation in feed intake, which serves as an indicator of resilience to multifactorial disease challenge. The company is currently developing a new breeding value that represents overall robustness to disease challenge. Incorporating this trait into the selection index will enable breeding of pigs that respond more effectively to a variety of pathogens. This comprehensive approach, which leverages all genetic variation influencing disease response, is a more balanced method than using single genes to improve response to single pathogens.

Overall, Topigs Norsvin's approach of capitalizing on naturally occurring genetic variation through traditional breeding has consistently proven to be an effective and sustainable way for improving health and welfare traits.