GENESEEK™
Molecular Solutions for Life

SEEK-GAIN™ Improving Swine Performance

SEEK-GAIN™: GeneSeek's Swine Performance Trait Testing Program

INTRODUCTORY PERIOD
$22/Sample for All 5 Tests!

GeneSeek is now offering validated porcine performance trait DNA marker testing utilizing information from 5 unique genes that impact:

- Feed Intake/Conversion
- Weight Gain
- Lean Growth
- Fat Content
- Meat Quality

MC4R* (U.S. Patent #6,803,190)

The melanocortin-4 receptor (MC4R) genetic test is associated with controlling growth and leanness. The producer and breeder can decide if they wish to choose the "fast" growth form of the gene (298Asn, A-nucleotide variation) or the "lean/efficient growth" form of the gene (298Asp, G-nucleotide variation). Effects are 3 days less to market weight for animals homozygous for the growth allele compared to those homozygous for the lean allele. Pigs homozygous for the lean allele have 8% less backfat and have a high feed conversion rate. Breeders can choose which characteristic (growth or leanness) is best for their program. These results have been well validated and are effective in all breeds tested to date except Hampshire. (Kim et. al., Mamm Genome. 2000 Feb;11(2):131-5.)

HMGA1* (U.S. Patent #7,244,564)

The high mobility group AT-hook protein 1 (HMGA1) genetic test is associated with lean mass percentage, growth and back fat in several swine breeds. Producers can test and select animals (T-variant at position 576) which are likely to be leaner and produce offspring that are leaner. (Kim et. al., Obes Res. 2004 Dec;12 (12):1981-94.)

CCKAR

The cholecystokinin type A receptor (CCKAR) genetic test is associated with physiological control of feed intake, hunger fulfillment, and obesity. Animals with at least one copy of the dominant G-variant have, on average, ~5% higher daily feed intake, 3% higher daily gain, and 3% fewer days to reach 180 kg, when compared to homozygotes for the A-variant (Houston et. al., Genetics. 2006 Nov; 174(3):1555-63.)

More ⟶

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PRKAG3* (U.S. Patent #6,919,177)

The protein kinase, AMP activated, gamma 3 subunit (PRKAG3) genetic test is associated with muscle glycogen content and meat quality. Certain variations of this gene has been referred to as the Rendement Napole (RN) gene – found to cause low ultimate pH and water holding capacity in pork, primarily observed in purebred or crossbred Hampshire populations. GeneSeek now offers a new test within this gene, available for use in all breeds tested to date (not only Hampshire), that determines the presence of another variation (199Ile, A-nucleotide variation) also associated with lower glycogen, higher ultimate pH and favorable color in loin and ham tissues. This new genetic marker test is valid in all breeds tested to date and there is considerable opportunity to increase the frequency of the beneficial allele and improve meat quality traits. (Ciobanu et.al., Genetics. 2001 Nov; 159(3):1151-62.).

CAST* (U.S. Patent Application #20,070,172,848)

The Calpastatin (CAST) genetic test is associated with meat quality. Calpastatin is responsible for inhibiting proteases that affect meat tenderness postmortem. Two variations within this gene have been identified that, collectively, are significantly associated with firmness, juiciness, Instron force, cooking loss, chewiness, and tenderness scores. Considerable meat quality improvements can be made by selecting for the favorable CAST (249Lys/638Arg, A-nucleotide variation for both) alleles. (Ciobanu et.al., J Anim Sci. 2004 Oct;82(10):2829-39.)

These gene marker tests are best used in combination. Use of all five, MC4R, HMGA1, CCKAR, PRKAG3 and CAST and would be beneficial for overall line development to improve growth, leanness and meat quality. A combination of MC4R (growth allele), HMGA1 and CCKAR could be used for growth and backfat improvement only, or MC4R (lean allele) and HMGA1 could be used together for significant leanness in breeding stock. Finally, PRKAG3 and CAST could be used in combination to improve meat quality.

Through January 31, 2008 GeneSeek is offering a special introductory price for its SEEK-GAIN™ testing (only $22 for all 5 genetic marker tests!). Breeders and producers can use this special pricing to determine current allele frequencies within their populations, and work to develop the best multigene testing strategies for future improvement of their lines.

The effects of the genetic marker tests outlined here were described in peer-reviewed research publications by independent researchers with no affiliations with GeneSeek. There is no guarantee that effects observed following use of these tests will be similar to those previously described. Many variables can influence observed results, including but not limited to genetic background, environmental conditions and management programs. GeneSeek assumes no responsibility for the observed performance of pigs following genotyping with SEEK-GAIN™ tests.

If you have questions or would like arrange for sample testing, please contact Jeremy Walker at GeneSeek, Inc. (jjwalker@geneseek.com, 402-435-0665)

GENESEEK'S Other Great Swine Tests and New Lower Prices!

- **PORCINE STRESS SYNDROME (PSS)**
- **PRRSV and PCV2 Testing**
- **SEEK-SIRE™: Parentage Testing Program**
- **RN (Hampshire) Genetic Test**
- **SEEK-TRACE™: Complete Source Verification Program**
- **E. coli F4ab/ac Genetic Test**
- **GenTec Insulin-Like Growth Factor 2 (IGF-2) Genetic Test**

*These tests are licensed to GeneSeek, Inc. by agreement with Iowa State University Research Foundation (ISURF).