American Berkshire Association
Testing Form

Owner Name:          Breeder Number:

Address:            Phone Number:

City:              State:              Zip:

Email Address:

**This sheet must be returned with all DNA samples.**

Blood Sample Submission Instructions: Collect blood samples using procedures outlined on the Blood Sample Collection Instruction Sheet. Correspond each blotter card to the appropriate service or diagnostic test that needs to be performed. See the Test Descriptions and Shipping Instructions on the reverse side.

I am sending in the following blood samples and would like the following tests performed.

** All Berkshire sires must be stress tested (Hal 1843*) - can be negative, carrier or positive for registration purposes. For the 100% Pure Berkshire Pork program, sires must test negative for stress (Hal 1843) and Napole. **

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<th>Blotter Card Information</th>
<th>Please check appropriate boxes for tests</th>
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□ The card(s) is already banked, please run above test(s).

Total Testing Costs $ __________

Certification: I/we certify the blood samples take from each animal identified above have correctly been labeled with corresponding identification numbers listed on this testing form. I also certify that I am the representative submitting this test form and have read and understand sample collection requirements. I/we agree to indemnify and hold ABA harmless against any losses, costs or damages, including attorney fees arising from the results of the performed tests. The ABA does not guarantee any test results.

Signature: _______________________________ Date: __________________

□ I have included payment

Please bill my credit card - Visa □ MasterCard □ Security Code __________

Credit Card # ____________________________ Expiration Date: ________________

Signature: _______________________________

Return to: ABA
2637 Yeager Road
West Lafayette, IN 47906
Test Descriptions:

Hal-1843* (Stress Testing) – To show at an ABA sponsored show, all Berkshire swine must be stress negative (Hal-1843* nm) and this must be printed on the pedigree. This designation can be found under the animal’s names on the left side of the pedigree. A negative mating is sufficient for show purposes (both the sire and dam are negative). If not a negative mating, the actual animal being exhibited at the show must be tested. For the 100% Pure Berkshire Pork® Certification program (meat program), all sires must be tested negative for the Stress gene. A negative mating is not sufficient for this program.

RN (Napole Gene) – This pork quality gene is found in some Berkshire animals. For the 100% Pure Berkshire Pork® Certification program (meat program), all sires must be tested negative for the Napole gene. A negative mating is not sufficient for this program.

Seek-Gain: Total Gain – This is a group of porcine performance trait DNA marker test utilizing information from eight unique genes that impact: Litter Size ● Feed Intake/Conversion ● Lean Growth ● Fat Content ● Meat Quality. Gene Markers Tested: MC4R, HMGA, CCKAR, PRKAG3, CAST 249, CAST 638, ESR, EPOR.

Seek-Gain: Litter Size – This is a group of porcine performance trait DNA marker tests utilizing information from two unique genes that impact litter size: Reproduction Rates ● Uterine Capacity. Gene Markers tested: ESR & EPOR.

Seek-Gain: Animal Growth – This is a group of porcine performance trait DNA marker test utilizing information from three unique genes that impact animal growth: Feed Intake/Conversion ● Lean Growth ● Weight Gain ● Fat Content. Gene Markers tested: MC4R, HMGA, CCKAR.

Seek-Gain: Meat Quality – This is a group of porcine trait DNA marker testing utilizing information from four unique genes that impact meat quality: Tenderness ● Juiciness ● Glycogen level, pH & Color. Gene Markers tested: PRKAG3, CAST 249, CAST 638.

Shipping Instructions – After the card is open (let card open to dry for at least 8 hours or overnight), cover the sample area with the flap, place the sample(s) in a zip lock bag to keep samples dry and mail to the American Berkshire Association, 2637 Yeager Road, West Lafayette, IN 47906. Samples can be mailed by regular first class mail – no need to ship overnight.

Testing will take two – six weeks, so please plan accordingly. The ABA reserves the right to use any licensed laboratory for testing.

MC4R* - 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 (AA)(298Asn, A-nucleotide variation) or the “lean/efficient growth” form of the gene (GG)(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 9% 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.) (U.S. Patent #6,803,190). The allele affects appear additive. The heterozygotes fall between the extremes.

HMGA1* - 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.) (U.S. Patent #7,244,564) – Favorable Allele - T

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). – Favorable Allele - G

PRKAG3* - 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 Rendepole 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.) (U.S. Patent Application #20,070,172,848). – Favorable Allele - A

CAST* - 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 (249Yls/638Arg, Anucleotide variation for both) alleles. (Ciobanu et.al., J Anim Sci. 2004 Oct;82(10):2829-39.) (U.S. Patent Application #20,070,172,848). – Favorable Allele - A

ESR Estrogen Receptor (Litter Size) - There is a genetic variant in the swine estrogen receptor gene that is associated with increased litter size. Estrogen plays a central role in many reproductive functions, including embryo survival, fetal development, fertility, maintenance of fertility, and secondary sexual characteristics. All of these traits can have an impact on litter size. Animals that carry one copy of the favorable variation of the gene will, on average, yield a 0.4 pigs per litter increase. Homozygotes (2 copies) for this genetic variation yield a 0.8 pigs per litter increase (average). This test is effective in Large White or Yorkshire breeds or crosses that involve them. (Rothschild, et. al., Proc. Natl. Acad. Sci. 1996 Jan; Vol: 93: 201-205) (U.S. Patent #5,550,024) – Favorable Allele - G

EPOR Erythropoietin (Litter Size) - There is a genetic variant in the swine erythropoietin receptor gene associated with uterine capacity and litter size. The favorable genetic variation has demonstrated an increase in uterine capacity as well as an increase in live births in two different swine populations at USDA-MARC, including the industry-relevant BX population. In a commercial herd, an extra pig per litter was observed when comparing boars that have two copies of the favorable EPOR marker versus boars with zero copies. (Vallet, J.L., et. al., Animal Genetics. 2005 36(2): 97-103) – Favorable Allele - T

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.

Parentage – the cost is $15/sample. Please note possible sires to test samples against. Contact the office if you have any questions on the need to parentage test.