Technology Licensing Opportunity

Non-Confidential Summary

DNA TEST FOR THE LP SPOTTING PATTERN/ CONGENITAL STATIONARY NIGHT BLINDNESS IN THE HORSE
ROI# 12-013

Opportunity:

Researchers at the University of Saskatchewan in collaboration with researchers from Cornell University have developed a novel test congenital stationary night blindness in Appaloosa horses.

Background:

The spotting patterns in Appaloosa horses associated with a gene known as "LP" (leopard complex). The spotting pattern is a highly valued trait in these horses. It was determined by Sandmayer et al. [Veterinary Ophthalmology, 2007 10(6): 368–375] that horses homozygous for a mutant form of the gene (LP as opposed to lp) have a disorder called congenital stationary night blindness also known as CSNB. Homozygous horses are those in which both alleles of the gene are the mutant form, LP/LP. Later, other University of Saskatchewan collaborators [Bellone et al. submitted] developed a test for diagnosing CSNB by analysis of animals' DNA to detect the mutant form of the LP gene. The mutant form of the gene appears to affect transcription of transient receptor potential cation channel, subfamily M, member 1 (TRPM1) gene [Bellone et al., Genetics 2008 179: 1861 – 1870 and Bellone et al., submitted]. Decreased expression of *TRPM1* in the eye and the skin is thought to cause both CSNB and *LP* in horses [Bellone et al., Genetics 2008 179: 1861 – 1870].

Test benefits:

The current diagnostic method for CSNB is cumbersome and expensive and requires a veterinary ophthalmologist to administer it. The new method developed by Dr. Rebecca Bellone and her colleagues requires only that a few hairs from a horse be provided to a qualified diagnostic laboratory. This test provides information to owners and breeders that can assist with managing and breeding their animals. The test identifies, in the horse's DNA, the mutation responsible for leopard patterning and whether it is present in both copies of the gene, only one, on not at all. If the horse has both copies of the mutated allele (LP/LP) he will also have CSNB. Heterozygotes LP/lp horses have 50% chance to transfer mutant form gene to their offspring. CSNB and LP is commonly observed in Appaloosa horses but also occurs in other breeds.

Industry Liaison Office
15 Innovation Boulevard, Suite 250
Saskatoon, SK, S7N 2X8
Tel: (306) 966-1465

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Researcher profile:

Dr. Rebecca Bellone

Research interests: genetic basis of coat color and associated disorders in the horse.

Patent Status:

US patent application no. 13/373911 (filled) on 12/5/2011.

Publications:

1. Sandmeyer, L. S., Bellone, R. R., Archer, S., Bauer, B. S., Nelson, J., Forsyth, G. and Grahn, B. H. (2011), Congenital stationary night blindness is associated with the leopard complex in the miniature horse. Veterinary Ophthalmology. doi: 10.1111/j.1463-5224.2011.00903.x Ojkic D, Martin E, Swinton J, Vaillancourt JP, Boulianne M, and Gomis S. Genotyping of Canadian isolates of fowl adenoviruses. Avian Pathol. 37(1): 95-100 (2008b).
2. Bellone, R., Brooks, S., Murphy, B., Sandmeyer, L., Forsyth, G., Archer, S., Bailey, E., and Grahn, B. (2008) Differential gene expression of TRPM1, the potential cause of congenital stationary night blindness and coat spotting patterns (*LP*) in Appaloosa horses (*Equus caballus).Genetics*179:1861-1870*.*

Development Stage:

The test is ready for licensing to a veterinary diagnostic laboratory.

For more information, please contact:

Oksana Akhova, PhD, MBA
Tel. (306) 966 5496
oksana.akhova@usask.ca