GGP

GeneSeek® Genomic Profiler™ Equine

The most comprehensive and cost-effective tool for equine genotyping.

GGP Equine supports a broad range of applications, including research and discovery of new traits, parentage analysis, and hereditary disease and trait screening. Designed using the most informative and useful SNPs from higher density arrays, GGP Equine is a comprehensive and cost-effective tool that provides you with informative, consistent, and accurate data.

History & Design

Originally based on Illumina's Equine SNP50 platform, this beadchip was created with data generated by the Equine Genome Mapping Workshop and Broad Institute's Equine Genome Sequencing Project using SNPs from Arabian, Andalusian, Akhal-teke, Icelandic, Standardbred, Thoroughbred, and Quarter Horse breeds. Our GGP Equine has undergone multiple iterations to improve coverage and minor allele frequency across many major horse breeds. Developed using the Multiple Objective Local Optimization (MOLO) algorithm[1], GGP Equine includes over 70,000 evenly distributed SNPs with an average minor allele frequency of 0.26.

Content & Application

In addition to the over 70,000 evenly distributed SNP markers available for research and discovery, GGP Equine also includes specific published markers associated with relevant health conditions, physical traits, Y chromosome markers, and over 1000 mitochondrial markers useful for research and breeding organizations.

GGP Equine is a robust and multipurpose tool that serves as a foundation for many research and commercial applications.

- Genome-wide association studies
- Identification of genes and polymorphisms that contribute to traits of interest
- Development of genomic predictions and enhanced breeding values
- Foundation for validation, translation, delivery of health, and trait markers to users such as horse owners, breeders, and veterinarians*

*Patent restrictions may apply to markers depending on region and application — contact us for more details.
[1] Wu XL, Xu J, Feng G, Wiggans GR, Taylor JF, et al. (2016) Optimal Design of Low-Density SNP Arrays for Genomic Prediction: Algorithm and Applications. PLOS ONE 11(9): e0161719. https://doi.org/10.1371/journal.pone.0161719

Published Health and Trait Markers Included with GGP Equine

Health	Coat Colors
Cerebellar abiotrophy	Extension (red/black factor)
Epidermolysis bullosa, junctionalis	Modifying mutation to extension
Hyperkalemic periodic paralysis II (HYPP)	Recessive black (agouti)
Dwarfism with joint laxity	Cream dilution
HERDA — hereditary equine regional dermal asthenia	Pearl
Hydrocephalus	Silver
Incontinentia pigmenti	Champagne
Malignant hyperthermia	Frame overo (lethal white overo)
Myotonia	Tobiano
Naked foal syndrome	Leopard complex spotting*
SCID — severe combined immunodeficiency	Curly hair variant 1
Glanzmann thrombasthenia	Curly hair variant 2
Multiple ocular defects	Dominant white (W1-W23)
Lavender foal syndrome*	Macchiato
Warmblood fragile foal syndrome*	Brindle / incongenitia pigmenti
Polysaccharide storage myopathy / exertional rhabdomyolysis*	Brindle (BR1)
Congenital stationary night blindness*	Sabino
Ocular squamous cell carcinoma	Splashed white 1
Dwarfism, ACAN-related	Splashed white 2
Androgen insensitivity syndrome (AIS)	Splashed white 3
Gilbert-meulengracht syndrome	Splashed white 4
Congenital hepatic fibrosis 1	Pattern 1 (PATN1)
Foal immunodeficiency syndrome	**Size Variation**
Risk Variants	Body size
Lordosis (swayback)	Pony size-1
Curiosity and vigilance	
Equine recurrent uveitis	

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*Not all listed genetic conditions have been validated with known controls.