



# A New GGP Portfolio From A New Brand of Partner

## New GGP portfolio—tools for expansion



Together our GGP-LD and GGP HD-150K will provide you and your association with ultramodern tools to achieve faster breed improvement and

highly accurate genomic-enhanced expected progeny differences (GE-EPDs).

- **Our new GGP-LD** gives you an effective, affordable genomic profiler for routine seedstock profiling, selection and management. You can rely on the GGP-LD for broader, deeper profiling of your entire seedstock herd.
- **The new GGP HD-150K** will become the gold standard of commercial genomic profilers, making it ideal for elite seedstock, donor dams, A.I. studs and cattle profiled for the next generation of genomic tests.

Each profile covers key maternal, performance and carcass traits plus offers genetic-health and parentage markers.

## The GGP-LD—your new workhorse profiler



Our GGP-LD offers high-accuracy genomic prediction at about half the price of high-density products. It is an ideal

tool to test your entire bull-calf crop and your replacement females, too.

- **Whole-herd use.** Speed improvement as you make confident breeding, selection and marketing decisions on a whole-herd basis.
  - Better cows. Your cows are what makes you different and better. Profiling your heifers speeds your progress, shortens your generation interval and helps you get ahead.
  - Profiling bull calves delivers accurate GE-EPDs plus knowledge of sire's key strengths.
- **Modern.** Supplies tens of thousands more markers for the new "one-step" method of GE-EPD calculation.
- **Reputation.** Provide highly accurate GE-EPDs for your yearling bulls while you profile and develop superior cow lines.
- **Growth.** Verify quality to new customers, distant buyers and internet auction viewers.

## The GGP HD-150K—the most powerful commercial seedstock profiler ever



Up to 150,000 genetic markers are built into the GGP HD-150K. It is the new gold standard of the industry.

- **Precision.** The GGP HD-150K provides more extensive data than any other commercial profiler. The result is higher accuracy you can use for elite animals.
- **Unique content.** Working with researchers globally, we include the most impactful new markers for cattle performance, reproduction and progeny. The GGP HD-150K detects gene variations that are not revealed by other products.
- **Elite animals.** Researchers will use this technology to test training populations and design new tests for the future.

## Genetic health and conditions

To save you time, GGP profiles are also designed to detect many genetic conditions. This helps us get the information to you faster, if you need to order it.

The GGP HD-150K and GGP-LD come with built-in detection of many genetic abnormalities and conditions in breeding cattle, including:

- Alpha-mannosidosis (MAN)
- Chondrodysplasia (CHO)
- Coat Color Dilutor (DL)
- Developmental Duplication (DD)
- Dun (DN)
- Hypotrychosis (HY)
- Idiopathic Epilepsy (IE)
- Neuropathic Hydrocephalus (NH)
- Osteopetrosis (OS)
- Pulmonary Hypoplasia with Anasarca (PHA)
- Tibial Hemimelia (TH)

## Verifying parentage

The GGP HD-150K and GGP-LD also contain all of the globally recognized USDA parentage markers. Using this standard, any breed of animal tested will be eligible for consideration as a parent or progeny.



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## Partnering for today and tomorrow

As genomic technologies evolve, your data may reveal even more insight in the future. We partner with seedstock producers, breed associations, researchers and others across the technology spectrum to give you the greatest possible benefit from your DNA data.

## Finding genes causing health and fertility problems

Part of our value is giving you information you can't get elsewhere. Working with globally renowned scientists, we identify the actual causes of physical variations that matter most in cattle production and apply these discoveries in our products.

## Valuable new markers

GeneSeek is continuously adding on newly discovered markers. Recent examples on the GGP-LD and GGP HD-150K include:

- Y chromosome test—working with USDA-MARC researchers, GeneSeek has included gene markers that assist in identifying sub-fertile heifers that carry fragments of male Y chromosome.
- PLAG1—a marker for growth rate and stature, under study by our collaborators at Iowa State University.

## The GGP HD-150K is different by design

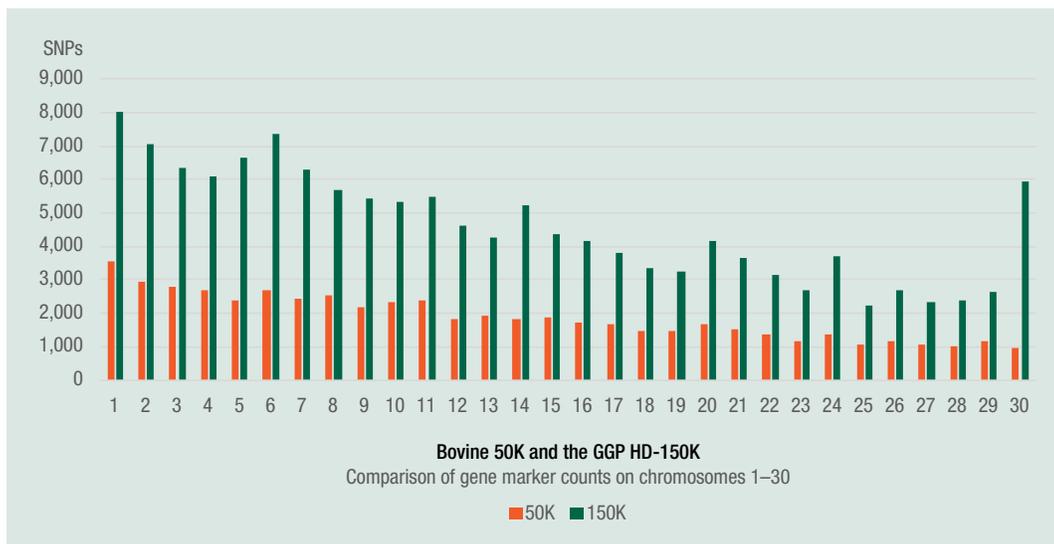
The better your test is designed, the more your profiles explain about future cattle performance potential.

- The GGP HD-150K uses tens of thousands more markers for pattern analysis than any other test.
- Plus, only the GGP HD-150K detects many actual genes that science has found are actively causing trait variation.

## How gene marker selection makes a difference for your seedstock operation

Using the active genes plus denser coverage translates into more power to predict cattle and progeny performance. Only the GGP HD-150K gives you this advantage. For example, we offer exclusive content on thousands of “causative” markers on the GGP HD-150K, which emerging science in functional genomics has tied to such issues as:

- Embryonic or fetal death, which might otherwise be interpreted as a fertility issue.
- Abnormalities that interfere with normal cattle growth, development and gain.



**Designing Smart**—With the GGP HD-150K, we have taken what we've learned and used it to design in more complete coverage of the cattle genome.

First, we have increased the number of gene markers for greater accuracy.

Plus, we have included many active genes, or “causative” variations identified by researchers.

This chart compares the number of gene-marker variations (single nucleotide polymorphisms, i.e., SNPs) between the Bovine 50K and the new GGP HD-150K. On chromosomes 1 through 30, the GGP HD-150K has tens of thousands more markers.

**The result**—a more powerful new gold standard for the industry.



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