



# Understanding Results

CLARIFIDE™ is a DNA-marker-based technology that provides a comprehensive genetic evaluation of each animal. CLARIFIDE is a 3,000-marker panel (3K) that delivers as many as 30 production, health and type traits, and nine composite indexes, which provide visibility to an animal's future genetic potential.

Your report will be provided in an Excel® spreadsheet with data organized in tabs in which you can easily review and sort

results. Information detailed in the report includes: job summary statistics for core traits; Genomic Predicted Transmitting Ability (GPTA) data for all production, health and type traits, and composite indexes; trait definitions; reliability data; and parentage summary. Animals are listed on the report in ascending order by animal ID numbers. Following is a brief explanation and snapshot of the elements of your report:

On-farm ID (Herd Management #)	Official ID (Registration #, USDA AIN, Calfhood Vaccination #)	AIPL #	Birth Date	Sex	Breed	Job #	NM\$	CM\$	FM\$	BPI	Milk	Fat	Prot
1205	84003272306		12/20/2008	F	HO		410	410	410	410	410	12	12
547	84003272307		12/21/2008	F	JE		347	347	347	347	347	14	14
25	84003272308		12/22/2008	F	BS		225	225	225	225	225	16	16

## Genomic Predicted Transmitting Abilities (GPTAs)

Predicted genomic breeding values for animals are based on the sum of the effects of the associated markers from the 3,000-marker panel as well as other available pedigree and performance data used in the evaluation. GPTAs are expressed in units of measure for the trait. For example, the GPTA for milk production is expressed in pounds of milk and the GPTA for productive life is reported in months.

To understand how to interpret GPTAs, consider the following three heifers and their Net Merit data. The three heifers have very

similar pedigree information available, but vast differences in Net Merit. CLARIFIDE can help select which females will generate the greatest profits and allow the producer to utilize this information with more confidence. Based on the example below, the producer would expect Heifer 2 to generate an additional \$498 return ( $\$124 + \$125 = 249 \times 2$ ) over her lifetime compared with Heifer 1.

Heifer	Net Merit \$	Reliability %
1	-124	62
2	125	63
3	48	62

## US/3K HO/JE/BS/01

This notation designates the Country Service Center (US), genotyping platform (3K), breed (HO=Holstein; JE=Jersey; BS=Brown Swiss), and version number (01) for the prediction equations applied to the markers used to compute the reported GPTAs.

## Animal Identification

Herd management number and/or official forms of ID, and associated sample collector barcode as provided by the customer on the sample submission forms.

## Breed

Breed of animal as reported by the customer. HO designates Holstein, JE is used for Jersey and BS denotes Brown Swiss.

## Sex

The letter F is used for females. This test is limited to dairy females.

## Reliability

Reliability values quantify the relationship between predicted and actual genetic merit. The higher the reliability, the lower the chance the animal's expressed performance will differ from the predicted performance. Reliability values range from zero to 99 and are expressed as percentages. Reliability values may vary based on available parentage information provided by the customer.

Definitions for the traits reported in the CLARIFIDE report are outlined in the chart below. For breed minimum and maximum GPTA ranges, please visit <http://aipl.arsusda.gov/eval.htm#summary>.

## Core Traits

Trait	Units	Descriptions	Breeds Available
Net Merit (NM\$)	\$	Net Merit \$ index expresses the expected lifetime profit of a female compared with the breed base. NM\$ utilizes economically relevant traits related to yield, health, longevity and calving ease. Specific traits used in the index include fat and protein yield (therefore also milk), productive life, daughter pregnancy rate, somatic cell score, udder composite, feet and leg composite, body size, and calving ability (including stillbirth information).	HO, JE, BS
Cheese Merit (CM\$)	\$	Cheese Merit \$ index combines the same traits as NM\$ with greater emphasis on protein and fat %, making this information particularly useful for producers selling their milk in the cheese market.	HO, JE, BS
Fluid Merit (FM\$)	\$	Fluid Merit \$ combines the same traits as NM\$ with more emphasis on milk yield, making this information particularly useful for producers selling their milk solely on volume.	HO, JE, BS

## Core Traits, cont.

Trait	Units	Descriptions	Breeds Available
Breed Performance Index (BPI)	Index Points	BPI represents differences in animals based on an overall total performance value by combining yield, conformation, health, longevity and management traits as compared with others in their breed. This calculation and value vary by breed in range and spread based on breed standards and traits available, and are estimates of similar breed TPI or PTI.	HO, JE, BS
Milk Yield (Milk)	Lbs.	Describes genetic differences in total pounds of milk produced during a 305-day lactation.	HO, JE, BS
Fat (Fat)	Lbs.	Describes the genetic differences in the quantity of milkfat produced during a 305-day lactation.	HO, JE, BS
Protein (Prot)	Lbs.	Describes the genetic differences in the quantity of protein produced during a 305-day lactation.	HO, JE, BS
Fat (Fat %)	Percent	Describes the genetic differences in the % of milkfat in milk.	HO, JE, BS
Protein (Prot %)	Percent	Describes the genetic differences in the % of protein in milk.	HO, JE, BS
Somatic Cell Score (SCS)	Log <sub>10</sub>	GPTAs for somatic cell score are indirect predictors of susceptibility to mastitis. Lower values indicate a more favorable somatic cell value throughout the duration of a cow's lactation compared with the breed base.	HO, JE, BS
Daughter Pregnancy Rate (DPR)	Percent	Measures the animal's genetic ability for better reproductive efficiency. DPR is expressed as the expected percent difference, compared with breed average, that a nonpregnant cow will become pregnant during each 21-day estrous cycle. An increase of 1.0 percent in DPR equals an approximate decrease of four days open.	HO, JE, BS
Productive Life (PL)	Months	Evaluates a cow's genetic ability to stay in the herd and accounts for characteristics that make a cow more sustainable for the dairy operation. It is expressed as the expected months in milk that a cow will have relative to the breed average.	HO, JE, BS
Sire Calving Ease (SCE)	Percent	Measures the genetic ability of a calf to be born easily and is expressed as a percentage of difficult births among first-calf heifer calvings. Lower numbers reflect easier calving.	HO, BS
Daughter Calving Ease (DCE)	Percent	Measures the genetic ability of a female to calve easily and is expressed as a percentage of difficult births for first-calf heifers. Lower numbers reflect easier calving.	HO, BS

### Core Traits, cont.

Trait	Units	Descriptions	Breeds Available
Sire Still Birth (SSB)	Percent	Measures the genetic tendency of calves from a particular sire to be stillborn or die within 48 hours. Lower numbers are desired.	HO
Daughter Still Birth (DSB)	Percent	Measures the genetic ability of a cow to produce live calves.	HO
Calving Ability (CA\$)	\$	Genetic index that measures the ability of a calf to be born easily and alive. Specific traits used in the CA\$ index include sire calving ease, daughter calving ease, sire still birth and daughter still birth.	HO

### Type Traits — Overall and Composite

Trait	Units	Descriptions	Breeds Available
Final Score Type (Type FS)	Points	Measures overall genetic conformation scores by incorporating the following type traits: udder, feet and legs, front end capacity, dairy strength and rump.	HO, JE, BS
Udder Composite (UDC)	Points	Genetic index measuring expected differences in overall udder conformation by incorporating several linear traits. Higher values indicate increased longevity. For every 0.1 increase in UDC, a 20-day increase in productive life is expected.	HO, JE, BS
Feet and Legs Composite (FLC)	Points	Genetic index measuring expected differences in overall feet and legs by incorporating values measuring mobility, foot angle and the rear leg tracking, set and placement. For every 0.1 increase in FLC, a 10-day increase in productive life is expected.	HO, BS
Body Size Composite (BDC)	Points	Genetic index measuring expected differences in overall size and capacity of an animal by incorporating stature, strength, body depth and width of rump. Higher values indicate a larger overall animal, thus may indicate larger feed maintenance needs. Desirable size varies based on herd goals, preferences and housing environment. For every 0.1 increase in BDC, a 25-pound increase in weight is expected.	HO, BS

## Type Traits, cont.

Trait	Units	Descriptions	Breeds Available
Stature (ST)	Short to Tall	Genetic differences in the height measured at the hips. A higher value indicates a taller animal.	HO, JE, BS
Strength (SG)	Frail to Strong	Genetic differences in width of chest, showing capacity of vital organs. A higher value indicates a stronger animal through the width of chest.	HO, JE, BS
Body Depth (BD)	Shallow to Deep	Genetic differences in the depth of rib. A higher value indicates greater depth of rib.	HO
Dairy Form (DF)	Tight to Open	Genetic differences in the angle and openness of the ribs and overall angularity (or coarseness) of an animal. A higher value indicates more openness of rib.	HO, JE, BS
Rump Angle (RA)	High Pins to Sloped (Low Pins)	Genetic differences in the slope from hips to pins. A value nearer to zero is more desirable.	HO, JE, BS
Rump - Thurl Width (RW)	Narrow to Wide	Genetic differences in the width between the pins. A higher value indicates a wider animal between the pins.	HO, JE, BS
Rear Legs Side View (LS)	Posty to Sickle	Genetic differences in the angle of the hock as viewed from the side. A value nearer to zero is more desirable.	HO, JE, BS
Rear Legs Rear View (LR)	Hock-in to Straight	Genetic differences in width of stance between the rear legs with little or no hock-in as viewed from behind. A higher value indicates the animal tracks straighter on its rear legs.	HO, BS
Foot Angle (FA)	Low to Steep	Genetic differences in the steepness of the hoof angle at the front of the toes. A higher value indicates greater hoof angle.	HO, JE, BS
Feet/Legs Score (FLS)	Low to High	Genetic differences in overall feet and legs, combining mobility, and feet and leg structure. A higher value is more desirable.	HO
Fore Udder Attachment (FU)	Loose to Strong	Genetic differences in the strength, firmness and shape of the fore udder attachment to the body wall. A higher value indicates a stronger fore udder attachment.	HO, JE, BS
Rear Udder Height (UH)	Low to High	Genetic differences in the distance between the bottom of the vulva and the top of the rear udder attachment. A higher value indicates a higher rear udder.	HO, JE, BS
Rear Udder Width (UW)	Narrow to Wide	Genetic differences in the distance across the rear udder at the point of attachment. A higher value indicates a wider rear udder.	HO

## Type Traits, cont.

Trait	Units	Descriptions	Breeds Available
Udder Cleft (UC)	Weak to Strong	Genetic differences in the depth of the cleft between rear quarters at the bottom of the udder. A higher value indicates a stronger udder cleft.	HO, JE, BS
Udder Depth (UD)	Deep to Shallow	Genetic differences in the distance between lowest point of udder floor and point of the hock. A higher value indicates a shallower, more desirable depth.	HO, JE, BS
Front Teat Placement (FT)	Wide to Close	Genetic differences in the distance between the base of the front teats. A higher value indicates more closely placed front teats.	HO, JE, BS
Rear Teat Placement (RT)	Wide to Close	Genetic differences in the distance between the rear teats as viewed from behind. A higher value indicates more closely placed rear teats.	HO
Teat Length (TL)	Short to Long	Genetic differences in the length of longest teat. A value nearer to zero is more desirable.	HO, JE, BS
Genomic Individual Inbreeding (Ind Inbrd)	Percent	This value measures actual homozygosity and percentages of genes in common instead of expected fractions of individual inbreeding calculated from pedigrees. Values closer to zero are more desirable.	HO, JE, BS
Genomic Future Inbreeding (Fut Inbrd)	Percent	This value indicates the level of inbreeding the progeny of this animal will contribute in the population if mated at random. The reference population represents all genotyped animals born in the last 10 years. Lower values are more desirable if genetic merit in production traits are equal. Animals higher in value should be managed to handle potential inbreeding issues in the next generation.	HO, JE, BS

CLARIFIDE helps dairy producers identify the females that—along with their offspring—will be the genetic foundation of the herd for years to come.

**For more information about CLARIFIDE,  
visit [www.pfizeranimalgenetics.com](http://www.pfizeranimalgenetics.com) or call 877-233-3362.**



Predict the future now.