Pedigree
Questions & Answers

HOLSTEIN FOUNDATION

Est. 1989

"Developing Future Leaders for a Vibrant Dairy Community"

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This workbook was developed to present a basic explanation of official Holstein pedigree formats and give readers basic skills in comparing and evaluating pedigrees. More comprehensive information on genetic evaluations and their calculations are available from each breed association. **Also, view the Holstein Foundation's *"Understanding Genetics and the Sire Summaries"* workbook for a more detailed explanation.**

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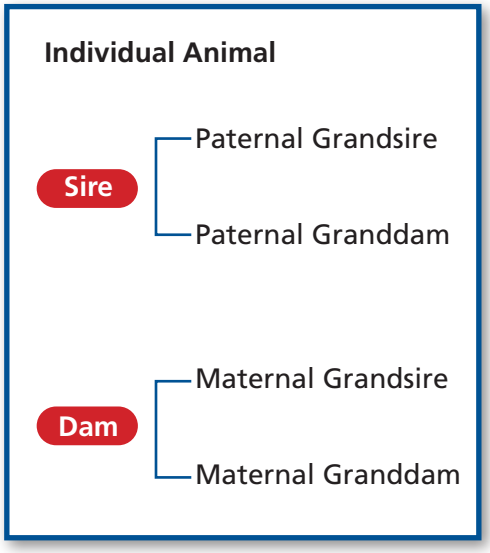
What is a Pedigree?

A pedigree is a record of an animal's ancestry, presented in a standard format. Information about the **sire**, the father of the animal, is listed on the top half of the pedigree, known as the "paternal side." Information about the **dam**, the mother of the animal, is printed on the bottom half of the pedigree, known as the "maternal side."



Three-Generation Pedigree Format

A three-generation pedigree includes the animal, sire and dam, and paternal and maternal grandparents. A four-generation pedigree would also include great-grandparents, and a five-generation pedigree would also include information about the great-great-grandparents.

Official Holstein pedigrees combine ancestry, performance and genetic information all into one easy-to-use document. Whether you're making mating decisions or trying to decide which sale animal might have a place on your farm, pedigrees give you the information and details you need to know. Official pedigrees also serve as a verified source of production and ancestry information, essential for the comfort of any potential buyer.

What are Pedigrees Used For?

Pedigrees provide detailed performance and genetic information about an animal and its ancestors, which has many uses. The pedigree values that measure the ability of the sire and dam to transmit their traits can help you predict the calf's future performance.

When selecting an animal to buy, different people will have different factors they look for on a pedigree, depending on what their goals are. Someone looking for a show calf will pay more attention to the calf's birthdate, the dam and sire's classification scores, any show winnings on the pedigree, along with Predicted Transmitting Abilities (PTAs) for Type, Udder and Feet and Leg composites. Someone looking for an exceptional milk cow will likely look at the TPI values on the pedigree, PTAs for Milk, Fat and Protein, as well as all production records on the pedigree. When investing a great deal of money in an animal, some might prefer the calf and her dam to be genomic tested so her PTAs have a higher reliability and are less likely to change with subsequent genetic evaluations. There are many examples, but all have one thing in common – analyzing a calf's pedigree will help provide insight into future performance. When beginning the search for your ideal project animal, first decide what information is most important to you.

Pedigrees also come in handy when making mating decisions on your animals. They allow you to review the animal's ancestry to avoid inbreeding, as well as get a total picture of the genetic strengths and weaknesses of the animal and her family. You can look for trends in milk production, classification score, TPI values, or other areas where you might want to improve the animal, then select a mate that will correct some of her weaknesses.

Parts of an Official U.S. Registered Holstein Pedigree

Pedigrees contain a wealth of important information on a single page. While each animal is different, their information is all presented in the same format, making it easy to evaluate and compare animals. Follow along with the pedigree below to learn about the information presented in each section of the pedigree. The following sections describe pedigrees issued by Holstein Association USA. For more specific information about other breeds, contact the breed association responsible for issuing the pedigree.

```
                    OFFICIAL HOLSTEIN PEDIGREE
U.S. Registered Holsteins FOR MAXIMUM PROFIT   Holstein Association USA, Inc.   U.S. Registered Holsteins FOR MAXIMUM PROFIT
                                www.holsteinusa.com
(1)  100% Registered Holstein Ancestry (RHA-NA)
                                                                                 18478   (2)
                                                                  07/12/2012    FEMALE
                                        P8 PTPI
(3)  SIEMERS BRDNK AVAS-PRIDE-ET         +1880
     USA 71360055 100%RHA-NA

(4)  PTA     +774M#     +26F#    +24P#    39%R 4/2013
     PTA     +.9PL# 2.94SCS# -1.9DPR# 6%DCE#
     PTA    +3.57T#+2.95UDC#+2.44FLC#   39%R 4/2013

                                                                        50K GTPI
                                                GEN-MARK STMATIC SANCHEZ  +1678 G
                                                USA 134422312 100%RHA-NA TR TV TL TY TD
                                                 6-07 94 EEEE                 04/18/2003

                                                PTA     +955M      +1F     +22P   99%R 4/2013
                                                PTA     +70NM   -.13%F   -.02%P  53%US
                                                PTA    +1.0PL  3.13SCS  -2.6DPR  5%DCE
                                                PTA    +3.05T +1.97UDC +2.57FLC   99%R 4/2013

                                                                        50K GTPI
                                                REGANCREST BREYA-ET       +1757 G
                                                USA 62496852 100%RHA-NA TL
                                                 3-04 88 VEEVV GMD DOM        11/11/2005

                                                PTA     +645M     +26F      +8P   87%R 4/2013
                                                PTA    +108NM   +.01%F   -.04%P
                                                PTA     -.8PL  2.67SCS  -2.7DPR  8%DCE
                                                PTA    +3.63T +3.48UDC +1.99FLC   88%R 4/2013
                                                      AGE  X DAYS  MILK DCRM %   FAT  %  PRT DCRC
                                                ***  2-02  2  305  26630 102 3.7  977 2.8 739  95
                                                           365  31960 102 3.6 1164 2.8 905  95
                                                ----------------------------------------------

                                        P9 50K GTPI
(5)  REGANCREST-GV S BRADNICK-ET         +1932 G
     USA 66625940 100%RHA-NA TR TV TL TY TD
      3-05 94 EEEE                   12/16/2009

(6)  PTA    +1298M     +15F     +33P   77%R 4/2013
     PTA    +212NM   -.12%F   -.02%P 100%US
     PTA     +.9PL  3.01SCS  -2.9DPR  5%DCE
     PTA    +4.16T +3.42UDC +3.10FLC   77%R 4/2013

                                                                        50K GTPI
                                                BRAEDALE GOLDWYN          +1944 G
                                                CAN 10705608 100%RHA-NA TV TL TY
                                                 CAN 08Y GP 84   GM 12/11     01/03/2000

                                                PTA     +68M     +35F     +15P   99%R 4/2013
                                                PTA    +371NM   +.12%F   +.05%P   8%US
                                                PTA    +1.7PL  2.63SCS   -.2DPR  6%DCE
                                                PTA    +3.00T +2.57UDC +2.46FLC   99%R 4/2013

                                                                          CTPI
                                                EO SIEMERS ASHLYN ALISHA-ET  +1371
                                                USA 60811477 100%RHA-NA
                                                                        03/06/2004

                                                PTA     -510M      +3F      -6P   56%R 4/2013
                                                PTA    -138NM   +.08%F   +.04%P
                                                PTA     -.6PL  3.10SCS  -1.2DPR 12%DCE
                                                PTA    +2.35T +1.39UDC  +.85FLC   55%R 4/2013

                                        3K GTPI
(7)  SIEMERS ALISHA GOLD AVA-ETS         +1822 G
     USA 62663346 100%RHA-NA
      6-06 95 EEEEE 2E               03/03/2006

(8)  PTA     +249M     +37F     +14P   80%R 4/2013
     PTA    +225NM   +.11%F   +.02%P
     PTA     +.8PL  2.86SCS   -.9DPR  7%DCE
     PTA    +2.98T +2.48UDC +1.78FLC   79%R 4/2013
           AGE  X DAYS  MILK DCRM %   FAT  %   PRT  DCRC
(9)  **   2-01  2  305  31420  93 4.5  1420 3.3 1027  93X
                   321  32860  93 4.5  1485 3.3 1081  93
     ***  3-03  2  305  39250  93 3.9  1512 3.2 1239  93
                   365  46150  93 3.8  1773 3.2 1492  93
     ***  5-03  2  305  48950  93 4.1  2025 3.3 1595  93X
                   365  56330  93 4.1  2301 3.3 1865  93
          LIFE    1675 195810     4.1  7986 3.5 6811
     ----------------------------------------------------
(10) H.M. ALL-AMERICAN SPR HFR CALF 2006
     3rd INTERNATIONAL 125,000 LB COW 2012
     3rd INTERNATIONAL SPR HFR CALF 2006
     5th INTERNATIONAL 5Y COW 2011
     2nd MID-W SPR NAT 6Y+ COW 2012
     3rd MID-W FALL NATL SPR YR HFR 2007

(11) Protein reported is true protein.          004302831     2131027       8/2/2013
     ©2001 HOLSTEIN ASSOCIATION USA, INC.  BRATTLEBORO, VERMONT 05302-0808  TELEPHONE 802-254-4551  TOLL-FREE WITHIN USA AND CANADA 800-952-5200   2112178
```

1. 100% Registered Holstein Ancestry (RHA-NA)

The first line, centered on a pedigree, shows the **percentage Registered Holstein ancestry (RHA)** and whether the animal is of a North American (RHA-NA) bloodline or International (RHA-I) bloodline. RHA percentages can range from 0 to 100% RHA, depending on the animal's lineage. Pride has 100% Registered Holstein Ancestry - North American, meaning that all of the animals in her pedigree are registered in North America; if any ancestor were registered in herdbooks outside North America, the animal will have the "-I" suffix after their %RHA. Animals may have less than 100% RHA if they have unidentified ancestors in their pedigree. If an animal has unidentified ancestors, the highest %RHA they could ever attain would be 99% RHA.

2.

```
                18478
07/12/2012    FEMALE
```

Animal Barn Name: This can be an animal's short name or herd management number. Pride's herd management number is 18478.

Birthdate: Pride was born on July 12, 2012 (7/12/2012).

Animal Gender: Pride is a female.

3.

```
                                        P8 PTPI
SIEMERS BRDNK AVAS-PRIDE-ET              +1880
USA 71360055 100%RHA-NA
```

Line 1: Percentile Ranking (P-Level) and Total Performance Index (TPI) Type

P-Level: Indicates the percentile ranking of the animal based on their TPI. The percentile ranking compares registered animals of the same gender born in the same year. P-values are assigned for the top 50% of animals born within a given year, labeled P5 through P9. Pride's P8 level indicates she is in the 80th percentile, meaning her PTPI is among the top 20% of heifers born in 2012.

TPI Type: TPI may be described in a few different ways on a pedigree, depending on what type of information is included in the animal's genetic evaluation. The following abbreviations indicate the type of TPI listed for an animal:

- **PTPI (Pedigree Total Performance Index):** A heifer or cow that has not been genomic tested, and doesn't have a required classification score and/or is not enrolled in an official milk production records testing program; for bulls, they would not have any daughter information included in their genetic evaluations. It is the average of the sire and dam's TPI values.
- **CTPI (Cow Total Performance Index):** A cow that has not been genomic tested, but has a required classification score and a milk record completed under an official testing program.
- **GTPI (Genomic Total Performance Index):** A heifer, cow or bull that has been genomic tested; they may or may not have a required classification score and/or a milk record completed under an official testing program, or for bulls, may or may not have daughter information included in their genetic evaluations.
- **TPI (Total Performance Index):** A bull that has not been genomic tested, but does have daughter information included in his genetic evaluation.

```
                                        P8 PTPI
SIEMERS BRDNK AVAS-PRIDE-ET              +1880
USA 71360055 100%RHA-NA
```

Line 2: Registered Name and TPI Value

Registered Name: Always includes the prefix of the breeder (the owner of the dam at the time she was bred), and may not exceed the 27-character limit, according to Holstein Association USA naming rules. Suffixes required on the animal's name must be included in the 27-character limit. Following are some suffixes you may see on pedigrees:

- **-RED:** Calf has red coat color
- **-TW:** Calf was a twin
- **-TRI:** Calf was part of a set of triplets
- **-ET:** Calf is the result of an embryo implanted into a recipient
- **-ETS:** Calf is the result of a split embryo
- **-ETN:** Calf is a clone

Total Performance Index (TPI®) value: An indicator of an animal's ability to transmit superior traits. TPI is a selection index calculated by Holstein Association USA. You can see Pride's TPI value is +1880. You may occasionally see different letters following a bull's TPI value. This indicates the source(s) of information used to calculate the genetic evaluation.

- **No label** = Domestic U.S. evaluation (no genomic data included)
- **G** = Genomic information is included in the evaluation
- **M** = The animal has a MACE (Multiple-trait Across Country Evaluation) evaluation. MACE evaluations are released by InterBull to estimate how sires from other countries would compare to sires with domestic U.S. proofs. InterBull (International Bull Evaluation Service) is a non-profit organization based in Uppsala, Sweden, responsible for calculating international genetic evaluations and promoting the development and standardization of the international dairy genetic evaluations.

MACE evaluations assist breeders by expressing information from other countries in the same format as U.S. animals are displayed. If a bull's evaluation contains information from both U.S. and foreign daughters (but no genomic information), it will be labeled with an M.

TPI Formula

$$\left[\frac{19(PTAP)}{17} + \frac{19(PTAF)}{22} + \frac{8(FE)}{52} + \frac{8(PTAT)}{0.8} + \frac{11(UDC)}{0.8} + \frac{6(FLC)}{0.8} + \frac{5(PL)}{1.6} + \frac{2(HT)}{2.0} + \frac{3(LIV)}{1.4} - \frac{4(SCS)}{0.13} + \frac{13(FI)}{1.3} - \frac{0.5(DCE)}{0.5} - \frac{1.5(DSB)}{0.8}\right] 3.8 + 2363$$

The value 2363 adjusts for our periodic base change, allowing TPI® values to be comparable across time.
Formula updated April 2021.

PTAP = PTA Protein	PL = PTA Productive Life	PTAT = PTA Type
PTAF = PTA Fat	LIV = PTA Cow Livability	UDC = Udder Composite
FE $ = Feed Efficiency $	FI = Fertility Index	FLC = Feet & Legs Composite
BWC = Body Weight Composite	DF = STA Dairy Form	DCE = PTA Daughter Calving Ease
	SCS = PTA Somatic Cell Score	DSB = PTA Daughter Stillbirth

Line 3: Nation Code, Registration Number, RHA, and Genetic Codes

Nation Code: Indicates the country an animal is registered in. Animals registered in the U.S. will have a country code of either "USA" or "840" (the International Organization for Standardization numeric code of the United States).

Registration Number: The animal's registration number officially identifies them in the Holstein Association USA database.

Genetic Codes: Genetic codes indicate the results of any genetic tests that have been done on the animal, labeled so breeders can see if there are any traits or conditions they should be aware of. Pride has not had any genetic tests done, so she has no genetic codes, but if you look at her sire, you will see an example of how these codes are presented on a pedigree.

Holstein Gene Codes			
BL	Bovine Leukocyte Adhesion Deficiency (BLAD)*	PO	Observed Polled**
BY	Brachyspina*	PC	Tested Heterozygous Polled**
CD	Cholesterol Deficiency*	PP	Tested Homozygous Polled**
CV	Complex Vertebral Malformation (CVM)*	RC	Carrier of Recessive Red Coat Color*
DP	Deficiency of Uridine Monophosphate Synthase (DUMPS)*	B/R	Black/Red Coat Color*
MF	Mulefoot (Syndactyly)*	DR1	Tested Heterozygous for Dominant Red**
		DR2	Tested Homozygous for Dominant Red**

Note: This is not an exhaustive list. ** denotes a recessive trait* ***denotes a dominant trait*

If an animal is tested free of a trait (meaning they do not carry any alleles for the trait), that result is also recorded and published on pedigrees and genetic evaluations. If the animal is not a carrier, they cannot pass those genes down to the next generation.

Tested-Free Codes			
TL	Tested free of BLAD	TD	Tested free of DUMPS
TY	Tested free of Brachyspina	TM	Tested free of Mulefoot
TC	Tested free of Cholesterol Deficiency	TP	Tested free of the Polled Condition (horned)
TV	Tested free of CVM	TR	Tested free of Recessive Red Coat Color

Line 4: Age at Classification, Final Score, Major Breakdowns, and Recognitions (if applicable)
Pride is just a heifer so she has not been classified or earned any Holstein Association USA recognitions yet, but if she had any of that information, it would be located in this space. For an example, look at Pride's dam's information (described here under Section 7).

4.

```
PTA     +774M#    +26F#    +24P#   39%R 4/2013
PTA     +.9PL# 2.94SCS# -1.9DPR# 6%DCE#
PTA    +3.57T#+2.95UDC#+2.44FLC#   39%R 4/2013
```

This section of the pedigree contains genetic values for the animal, allowing the viewer to see important information about the animal's transmitting ability for several traits. PTA (Predicted Transmitting Ability) expresses the level of genetic superiority that an animal transmits to its offspring for a given production or type trait. PTA values are used to rank animals based on their genetic merit.

For young animals, PTA values are estimated by averaging the sire and dam's PTA values. When the genetic values listed are based on parental average, it is indicated by the "#" symbol, as you can see on Pride's pedigree.

Line 1: PTAs for Pounds of Milk (M), Pounds of Fat (F) and Pounds of Protein, along with the percent reliability for the production evaluation and the month and year the evaluation was calculated

Line 2: PTAs for Productive Life (PL), Somatic Cell Score (SCS), Daughter Pregnancy Rate (DPR), and Daughter Calving Ease (DCE)

Line 3: PTAs for Type (T), Udder Composite (UDC), and Feet & Leg Composite (FLC), along with the percent reliability for the type evaluation and the month and year the evaluation was calculated

Linear composite indexes such as UDC and FLC combine linear trait information on several related traits into one numerical value. Composite indexes can be used as a selection tool in breeding programs to identify animals which are predicted to transmit a desirable combination of the traits included in the composite, which can be more effective than simply selecting for individual traits. The values for each trait in a composite index are weighted according to their economic value and added together to arrive at the index value, then standardized.

Traits included in the **Udder Composite Index** are Fore Udder Attachment, Udder Cleft, Rear Teat Placement, Front Teat Placement, Rear Udder Height, Rear Udder Width, Udder Depth, Teat Length and Stature

The **Feet & Leg Composite** incorporates the traits Foot Angle, Rear Legs-Rear View, Feet & Leg Score and Stature.

Learn more about all of the composite indexes and how they are calculated in the Holstein Foundation's free Understanding Genetics & the Sire Summaries workbook!

5.

```
                                P9 50K GTPI
REGANCREST-GV S BRADNICK-ET        +1932 G
USA 66625940 100%RHA-NA TR TV TL TY TD
  3-05 94 EEEE                  12/16/2009
```

Sections 5 and 6 as labeled on this pedigree include information about the father of the animal, known as the sire.

Line 1: P-Level and TPI Type

If an animal has been genomic tested, you will find the indicator on this line, after the P-level. Bradnick has been tested with the 50K SNP genomic test. Following are genomic test indicators you might find on a pedigree are:

- **3K:** Tested with the 3K SNP Genomic Test
- **6K:** Tested with the 6K SNP Genomic Test
- **9K:** Tested with the 9K SNP Genomic Test
- **50K:** Tested with the 50K SNP Genomic Test
- **IMP:** This animal has an imputed GTPI, meaning that they have enough offspring who have been tested that the genetic evaluation is able to estimate enough of their genotype to provide a comparable genomic evaluation. For more information about the different types of genomic tests available, visit www.holsteinusa.com.

Line 2: Sire's Registered Name and TPI Value

Line 3: Sire's Nation Code, Registration Number, %RHA and Genetic Codes

Line 4: Classification scores, recognition information and date of birth

- Many bulls have their physical conformation evaluated by Holstein Association USA classifiers and receive official classification scores. Three pieces of information are provided here about the classification score.
    - **Age at classification** is represented in years and months. Bradnick received the listed classification score when he was three years and five months of age (3-05).
    - **Final Score**: Bradnick is scored 94 points, putting him in the Excellent category.
    - **Major Breakdowns**: To arrive at a final score, each animal receives a score for several individual traits, which fall into categories known as major breakdowns. Bulls have four major breakdowns:
        - Front End & Capacity = 40% of the final score
        - Dairy Strength = 25%
        - Rump = 10%
        - Feet & Legs = 25%

    Pedigrees show what category of score each major breakdown received:
        - E = Excellent (90-100 points)
        - V = Very Good (85-89 points)
        - + = Good Plus (80-84 points)
        - G = Good (75-79 points)
        - F = Fair (65-74 points)
        - P = Poor (50-64 points)

    You can see that Bradnick has scored Excellent in all four major breakdowns.

- Some bulls will be recognized as **Gold Medal Sires**, such as Braedale Goldwyn on this Pedigree, indicated as "GM" with the month and year the recognition was given. To be recognized as a Gold Medal Sire, bulls must meet a minimum TPI requirement (updated semi-annually to recognize approximately 25 new bulls each year), have a minimum 90% reliability for PTA Fat and PTA Type, and be free of undesirable recessive traits. All bulls 87% RHA and higher are automatically evaluated twice a year, and Gold Medal Sire recognition is permanent.
- **Date of Birth:** Bradnick was born on December 16, 2009 (12/16/2009)

6.

```
PTA     +1298M     +15F     +33P   77%R 4/2013
PTA     +212NM   -.12%F   -.02%P 100%US
PTA      +.9PL  3.01SCS  -2.9DPR  5%DCE
PTA     +4.16T +3.42UDC +3.10FLC   77%R 4/2013
```

Line 1: PTAs for Pounds of Milk (M), Pounds of Fat (F) and Pounds of Protein, along with the percent reliability for the production evaluation and the month and year the evaluation was calculated

Line 2: PTAs for Net Merit Dollars, a selection index calculated by USDA (NM), Percent Fat (%F), Percent Protein (%P), along with the percentage of the bull's daughters that are in the United States (%US)

Line 3: PTAs for Productive Life (PL), Somatic Cell Score (SCS), Daughter Pregnancy Rate (DPR) and Daughter Calving Ease (DCE)

Line 4: PTAs for Type (T), Udder Composite (UDC), and Feet & Legs Composite (FLC), along with the percent reliability for the type evaluation and the month and year the evaluation was calculated

7.

```
                                    3K GTPI
SIEMERS ALISHA GOLD AVA-ETS        +1822 G
USA 62663346 100%RHA-NA
 6-06 95 EEEEE  2E              03/03/2006
```

Line 1: Dam's TPI Type

Line 2: Dam's Registered Name and TPI Value

Line 3: Dam's Nation Code, Registration Number, %RHA and Genetic Codes

Line 4: Classification scores, recognition information and date of birth

- **Age at classification** is represented in years and months. Ava received the listed classification score when she was six years and six months of age.
- Final Score: Ava is scored 95, putting her in the Excellent category
- Major Breakdowns: The current classification breakdowns were introduced in December 2004. Classification scores assigned before this date are underlined on pedigrees. Cows have five major breakdowns:
  - Front End & Capacity = 15% of the final score
  - Dairy Strength = 20%
  - Rump = 5%
  - Feet & Legs = 20%
  - Udder = 40%
- **Multiple E designation**: Cows may receive multiple E designation if classified Excellent subsequent times in the following age brackets (2E and higher designations are listed on the pedigree):
  - 1E: Up to 6 years old
  - 2E: 6 to 9 years old
  - 3E: 9 to 12 years old
  - 4E: 12 to 15 years old
  - 5E: 15 to 18 years
  - 6E: Any subsequent three year period
- Recognitions (if applicable): Holstein Association USA can designate cows with two major recognitions: Gold Medal Dam (GMD) and Dam of Merit (DOM). Bradnick's dam, Breya, has received both of these honors.

- **Gold Medal Dam:** A cow must meet several strict criteria to be recognized as a GMD. She and at least three of her daughters must be classified. The cow herself must be milking in a herd participating in a Holstein TriStar service option (Custom, Deluxe or Premier). Equal emphasis is placed on both production and type, and on progeny and dam performance; the dam's age adjusted final and Mature Equivalent (ME) production records are evaluated, along with the average of the daughters' age adjusted classification scores and ME production records. Separate cutoffs are determined by the birth year of the dam. If the cow herself does not qualify on an ME production basis, she may qualify based on high lifetime production credits (200,000 pounds of milk OR 7,200 pounds of fat, OR 6,400 pounds of protein). Automatic evaluation is done twice a year for all cows 87% RHA or higher that were born in the past 25 years, and GMD is a permanent recognition.

- **Dam of Merit:** To be recognized as a DOM, a cow must have a GTPI or CTPI exceeding a cutoff based on their year of birth. The cow must have at least three offspring with a PTA for production and type, and the animal's GTPI or CTPI must be calculated using a required classification score. Automatic evaluation is done twice a year for all cows 87% RHA or higher that were born in the past 25 years and milking in a herd enrolled in a Holstein TriStar service option. Like the others, DOM is permanent recognition.

- **Date of Birth:** Ava was born on March 3, 2006 (3/3/2006)

8.

```
PTA      +249M      +37F      +14P    80%R  4/2013
PTA     +225NM    +.11%F    +.02%P
PTA      +.8PL   2.86SCS    -.9DPR   7%DCE
PTA     +2.98T  +2.48UDC  +1.78FLC    79%R  4/2013
```

Line 1: PTAs for Pounds of Milk (M), Pounds of Fat (F) and Pounds of Protein, along with the percent reliability for the production evaluation and the month and year the evaluation was calculated

Line 2: PTAs for Net Merit Dollars, a selection index calculated by USDA (NM), Percent Fat (%F), Percent Protein (%P)

Line 3: PTAs for Productive Life (PL), Somatic Cell Score (SCS), Daughter Pregnancy Rate (DPR) and Daughter Calving Ease (DCE)

Line 4: PTAs for Type (T), Udder Composite (UDC), and Feet & Legs Composite (FLC), along with the percent reliability for the type evaluation and the month and year the evaluation was calculated

9.

	AGE	X	DAYS	MILK	DCRM	%	FAT	%	PRT	DCRC
**	2-01	2	305	31420	93	4.5	1420	3.3	1027	93X
			321	32860	93	4.5	1485	3.3	1081	93
***	3-03	2	305	39250	93	3.9	1512	3.2	1239	93
			365	46150	93	3.8	1773	3.2	1492	93
***	5-03	2	305	48950	93	4.1	2025	3.3	1595	93X
			365	56330	93	4.1	2301	3.3	1865	93
	LIFE		1675	195810		4.1	7986	3.5	6811	

This portion of the pedigree contains information about the cow's milk production records, and can be listed for any female on the pedigree (when available), always found beneath the PTA information. In this instance, it is for Pride's dam, Ava. Pride doesn't have any milk production information herself as she is just a heifer. Herds must be enrolled in an option of Holstein Association USA's TriStar program in order to have production records printed on pedigrees.

	AGE	X	DAYS	MILK	DCRM	%	FAT	%	PRT	DCRC
**	2-01	2	305	31420	93	4.5	1420	3.3	1027	93X
			321	32860	93	4.5	1485	3.3	1081	93
***	3-03	2	305	39250	93	3.9	1512	3.2	1239	93
			365	46150	93	3.8	1773	3.2	1492	93
***	5-03	2	305	48950	93	4.1	2025	3.3	1595	93X
			365	56330	93	4.1	2301	3.3	1865	93
	LIFE		1675	195810		4.1	7986	3.5	6811	

Several columns of information provide key data about a cow's lactations:

- The first column includes an indicator for the level of the TriStar program the herd was enrolled in when the cow made the record, either Custom (*), Deluxe (**) or Premier (***), for all records made after January 1997. Records started before January 1997 will have an indicator of which type of testing program the cow was enrolled in.
- Age of the cow when the record was started (AGE), listed as years and months, like the classification score.
- Number of times per day the cow was milked (X)
- Number of days included in the listed lactation (DAYS)
- Pounds of milk (MILK)
- Data Collection Rating for pounds of Milk (DCRM)
- Percent fat for the lactation (%)
- Pounds of fat for the lactation (FAT)
- Percent protein for the lactation (%)
- Pounds of protein for the lactation (PRT)
- Data Collection Rating for Components (DCRC)

Any "X" at the end of a row of production information indicates that the record contains some extreme test-day data. A second row of production information for a lactation is only listed if the cow's lactation lasted longer than 305 days (up to 365 days) for that lactation. One a cow produces more than 100,000 pounds of milk, her total production information appears on the pedigree and is labeled "LIFE."

State and national leader records for Milk, Fat and Protein production are labeled on the line below the outstanding record. The designation indicates the placing (1st, 2nd or 3rd), where the record was made (either the state abbreviation or NAT for a National record), and category (MILK, FAT, or PROTEIN). This recognition is based on TriStar Premier records and awarded in seven age categories.

10.

```
H.M. ALL-AMERICAN SPR HFR CALF 2006
3rd INTERNATIONAL 125,000 LB COW 2012
3rd INTERNATIONAL SPR HFR CALF 2006
5th INTERNATIONAL 5Y COW 2011
2nd MID-W SPR NAT 6Y+ COW 2012
3rd MID-W FALL NATL SPR YR HFR 2007
```

If a female on the pedigree placed in the top five in a class at a National Holstein Show, her placing will be listed beneath all milk production information. All-American recognitions may also be included on the pedigree.

11. `Protein reported is true protein.  004302831  2131027  8/2/2013`

Included here is a label for the type of protein listed on the pedigree (true or crude), along with two Holstein USA Processing Numbers, and the date the pedigree was issued.

In May 2000, Holstein Association USA began printing True Protein as the default format. Crude protein is still available as an option when ordering internet pedigrees for international marketing purposes.

PRACTICE ACTIVITIES

What Are Your Goals?

Imagine that you have won a $2,500 calf scholarship to purchase a heifer as your dairy project. What are some minimum criteria you would like to set for animals you will consider purchasing?

- Age _____
- Heifers PTPI or GTPI _____
- %RHA _____
- Dam's classification score _____
- Dam's milk production _____

List any other criteria you will consider:

- _____
- _____
- _____

Test Your Pedigree Knowledge

Use the pedigree for Wormont Observer Alexis on the following page to complete the exercise

1. What is Alexis' p-level?
2. What is her sire's TPI?
3. What does "PTA" stand for on a pedigree?
4. What is her dam's final score and age at classification?
5. What is Planet's relationship to Alexis?
6. Which maternal female relative has the highest CTPI?
7. What is her sire's reliability for PTA Type?
8. What is the dam's PTA for pounds of protein?
9. What is the name of the granddam that is a Gold Medal Dam?
10. Of the three bulls listed on the pedigree, which has the highest PTA for milk?
11. What is Alexis' herd management number?
12. What is the country code, registration number and %RHA of her maternal grandsire?
13. When was Alexis born?
14. How many pounds of milk did her dam produce in her first 305-day lactation?
15. What is Alexis' PTA for Productive Life?
16. What is her sire's PTA for Udder Composite?
17. Which version of genomic test was Alexis tested with?
18. What is her maternal grand dam's percent Registered Holstein Ancestry?
19. What is her sire's PTA for Protein Percent?
20. Which animal on the pedigree has been tested and found to be a carrier for the red coat color gene?
21. What does "SCS" stand for on a pedigree?

(Answers on page 23)

Alexis

OFFICIAL HOLSTEIN PEDIGREE

U.S. Registered Holsteins FOR MAXIMUM PROFIT

Holstein Association USA, Inc.

www.holsteinusa.com

98% Registered Holstein Ancestry (RHA-NA)

WORMONT OBSERVER ALEXIS P9 9K GTPI +2266 **G** — 1141 — 12/30/2011 — FEMALE

USA 70850909 98%RHA-NA RC

PTA	+1417M	+68F	+40P	73%R	4/2013
PTA	+800NM	+.06%F	-.01%P		
PTA	+7.5PL	2.72SCS	+1.4DPR	5%DCE	
PTA	+1.82T	+2.13UDC	+1.05FLC	72%R	4/2013

ENSENADA TABOO PLANET-ET 50K GTPI +2176 **G**

USA 60597003 100%RHA-NA TR TV TL TY TD

4-11 90 EEVV GM 12/12 — 03/03/2003

PTA	+2216M	+70F	+66P	99%R	4/2013
PTA	+721NM	-.04%F	+.00%P	71%US	
PTA	+6.7PL	2.98SCS	-.5DPR	6%DCE	
PTA	+1.93T	+1.44UDC	-.47FLC	99%R	4/2013

DE-SU OMAN 6121-ET IMP GTPI +1870 **G**

USA 61681442 100%RHA-NA TL

2-08 86 VV+VV GMD DOM — 03/02/2004

PTA	+612M	+55F	+25P	98%R	4/2013
PTA	+421NM	+.12%F	+.02%P		
PTA	+2.2PL	2.63SCS	-.9DPR	7%DCE	
PTA	+1.81T	+1.83UDC	+.65FLC	97%R	4/2013

	AGE	X	DAYS	MILK	DCRM	%	FAT	%	PRT	DCRC
***	2-01	3	305	29850	99	4.3	1293	3.0	904	86
			365	34770	99	4.3	1505	3.2	1108	86

DE-SU OBSERVER-ET P9 50K GTPI +2332 **G**

USA 65917481 100%RHA-NA TR TV TL TY TD

4-06 90 EVEV — 11/07/2008

PTA	+1602M	+61F	+52P	96%R	4/2013
PTA	+792NM	+.02%F	+.02%P	100%US	
PTA	+7.2PL	2.76SCS	+.6DPR	6%DCE	
PTA	+2.70T	+3.02UDC	+.89FLC	91%R	4/2013

EMERALD-ACR-SA T-BAXTER 50K GTPI +1926 **G**

USA 132973942 100%RHA-NA B/R TV TL TY TD

04/07/2002

PTA	+1699M	+69F	+27P	99%R	4/2013
PTA	+481NM	+.02%F	-.09%P	22%US	
PTA	+4.6PL	2.94SCS	-1.6DPR	6%DCE	
PTA	+1.81T	+1.33UDC	+1.77FLC	99%R	4/2013

WORMONT BAXTER ALEXA CTPI +1880

USA 65975302 96%RHA-NA TL TD

3-11 86 V+VVV — 06/18/2008

PTA	+1460M	+44F	+23P	55%R	4/2013
PTA	+492NM	-.03%F	-.08%P		
PTA	+5.2PL	2.91SCS	-.2DPR	6%DCE	
PTA	+1.35T	+1.17UDC	+1.37FLC	53%R	4/2013

	AGE	X	DAYS	MILK	DCRM	%	FAT	%	PRT	DCRC
**	2-03	3	305	20780	100	3.3	684	2.8	588	93
			365	23870	100	3.4	805	2.9	682	93
***	3-06	2	305	24390	96	4.0	970	2.9	702	93
			353	26380	96	4.0	1049	2.9	767	93

WORMONT POTTER ALLY CTPI +1695

USA 62801415 93%RHA-NA TL TD

2-10 83 +++++ — 01/10/2006

PTA	+1121M	+14F	+19P	61%R	4/2013
PTA	+365NM	-.10%F	-.05%P		
PTA	+4.2PL	2.92SCS	+1.4DPR	7%DCE	
PTA	+.52T	+.30UDC	+.51FLC	51%R	4/2013

	AGE	X	DAYS	MILK	DCRM	%	FAT	%	PRT	DCRC
**	2-05	3	305	22310	100	3.3	730	2.9	657	95
			326	23520	100	3.3	769	3.0	695	95
**	3-05	3	305	27000	102	3.1	847	2.8	760	96
			363	29930	102	3.2	954	2.8	852	96
**	4-07	3	305	26250	101	2.8	747	2.8	746	92
			349	28560	101	2.9	833	2.8	812	92
**	5-07	2	305	23700	99	3.5	823	2.9	685	94
			308	23840	99	3.5	825	2.9	687	94
***	6-07	2	287	22620	94	3.9	875	2.9	648	94
	LIFE		1633	128470		3.3	4256	2.9	3694	

Protein reported is true protein. 004304205 2132410 8/7/2013

Practicing Pedigree Comparisons

Answer these questions using the following two pedigrees.

1. Which calf's maternal granddam has lifetime production records?
2. Which calf is a bull?
3. Which calf is sired by the bull with a higher TPI?
4. Which calf's dam has the higher Udder Composite index?
5. Which calf has direct family members that are carriers of brachyspina?
6. Which dam is predicted to transmit a higher level of overall type?

A.

OFFICIAL HOLSTEIN PEDIGREE

U.S. Registered Holsteins FOR MAXIMUM PROFIT — Holstein Association USA, Inc. — U.S. Registered Holsteins FOR MAXIMUM PROFIT

www.holsteinusa.com

100% Registered Holstein Ancestry (RHA-NA)

2202
03/03/2013 FEMALE

P9 77K GTPI
KELLERCREST SUPERSIRE DARVA +2299 **G**
USA 72151705 100%RHA-NA

PTA +1526M +93F +50P 71%R 4/2013
PTA +723NM +.14%F +.01%P
PTA +4.7PL 2.68SCS -.4DPR 6%DCE
PTA +2.79T +2.22UDC +1.84FLC 70%R 4/2013

P9 50K GTPI
ROYLANE SOCRA ROBUST-ET +2245 **G**
USA 64966739 100%RHA-NA TR TV TL TD
3-03 88 VVVV 12/23/2008

PTA +1441M +82F +50P 82%R 4/2013
PTA +758NM +.11%F +.03%P 100%US
PTA +5.8PL 2.79SCS -.5DPR 5%DCE
PTA +1.98T +1.96UDC +2.00FLC 76%R 4/2013

50K GTPI
AMMON-PEACHEY SHAUNA-ET +2302 **G**
USA 66228178 100%RHA-NA
2-04 87 VEV+V DOM 04/16/2009

PTA +1999M +76F +67P 79%R 4/2013
PTA +701NM +.01%F +.02%P
PTA +4.7PL 2.76SCS -.2DPR 6%DCE
PTA +2.69T +2.07UDC +.93FLC 80%R 4/2013

	AGE	X	DAYS	MILK	DCRM	%	FAT	%	PRT	DCRC
***	2-01	3	305	29520	97	4.1	1196	3.0	889	96
			365	35120	97	4.1	1427	3.1	1079	96

P9 50K GTPI
SEAGULL-BAY SUPERSIRE-ET +2527 **G**
USA 69981349 100%RHA-NA TV TL TY TD
12/28/2010

PTA +2484M +113F +78P 73%R 4/2013
PTA +938NM +.09%F +.01%P 100%US
PTA +6.1PL 2.77SCS -.2DPR 5%DCE
PTA +2.67T +2.02UDC +1.72FLC 72%R 4/2013

50K GTPI
MISSION-BELL BOLTON DEZI-ET +1966 **G**
USA 139273799 100%RHA-NA BY
4-05 90 EVEVE 04/01/2008

PTA +1258M +59F +34P 80%R 4/2013
PTA +398NM +.05%F -.01%P
PTA +2.1PL 2.81SCS -1.0DPR 8%DCE
PTA +2.45T +2.21UDC +1.69FLC 81%R 4/2013

	AGE	X	DAYS	MILK	DCRM	%	FAT	%	PRT	DCRC
***	2-00	2	305	30790	100	4.5	1392	3.1	946	100X
			365	37630	100	4.5	1697	3.1	1165	100
***	3-09	3	305	37650	93	4.0	1524	3.0	1131	93
			365	43210	93	4.0	1724	3.1	1327	93

50K GTPI
SANDY-VALLEY BOLTON-ET +1988 **G**
USA 131823833 100%RHA-NA BY TV TL
5-11 90 EE+V GM 4/11 09/11/2001

PTA +1943M +72F +51P 99%R 4/2013
PTA +402NM +.00%F -.03%P 24%US
PTA +1.5PL 2.92SCS -2.6DPR 10%DCE
PTA +2.50T +2.46UDC +2.03FLC 99%R 4/2013

IMP GTPI
MISSION-BELL B IRON DIRECT +1630 **G**
USA 133811803 100%RHA-NA
9-06 93 EEEEE 3E GMD DOM 11/24/2002

PTA +371M +7F +4P 88%R 4/2013
PTA +151NM -.02%F -.03%P
PTA +1.3PL 2.68SCS +.6DPR 7%DCE
PTA +1.67T +1.43UDC +.23FLC 86%R 4/2013

	AGE	X	DAYS	MILK	DCRM	%	FAT	%	PRT	DCRC
***	2-00	2	305	19340	95	3.8	744	3.0	580	95
			365	22340	95	3.9	871	3.1	686	95
***	3-04	2	305	31100	93	4.9	1520	2.9	913	93X
			365	36380	93	4.8	1739	3.0	1097	93
***	5-06	2	305	35060	95	3.7	1307	2.9	1007	95
			365	40530	95	3.8	1520	2.9	1187	95
***	7-02	2	305	37030	95	4.0	1476	2.8	1039	95
	LIFE		1928	170930		4.1	6973	3.0	5191	

Protein reported is true protein. 004305455 2132611 8/8/2013

7. Which maternal granddam has the higher first lactation 305-day milk production record?
8. Which calf has the younger dam?
9. Which calf has been genomic tested with results reported to Holstein Association USA?
10. Which calf has a grand dam that has been classified Excellent multiple times?
11. Which calf is the youngest?
12. Which dam has the higher PTA % Protein?
13. Which sire has the higher PTA for Net Merit?
14. Which calf has genetic values based on parent average printed on their pedigree?

B.

OFFICIAL HOLSTEIN PEDIGREE

U.S. Registered Holsteins FOR MAXIMUM PROFIT — Holstein Association USA, Inc. — U.S. Registered Holsteins FOR MAXIMUM PROFIT

www.holsteinusa.com

100% Registered Holstein Ancestry (RHA-NA)

2282 MALE — 07/22/2013

WELCOME PREDEST GRIMSHAW-ET — P9 PTPI +2315
840003011639730 100%RHA-NA

PTA	+1192M#	+88F#	+51P#	38%R	4/2013
PTA	+4.9PL#	2.73SCS#	+.4DPR#		
PTA	+2.53T#	+2.09UDC#	+2.17FLC#	38%R	4/2013

RICKLAND PREDESTINE 669-ET — P9 50K GTPI +2460 G
USA 69177592 100%RHA-NA TV TL TY TD — 09/07/2011

PTA	+1097M	+91F	+50P	72%R	4/2013
PTA	+904NM	+.18%F	+.06%P	100%US	
PTA	+7.5PL	2.76SCS	+1.4DPR	5%DCE	
PTA	+2.82T	+2.24UDC	+2.20FLC	72%R	4/2013

VISION-GEN MANOMAN GILDIE — 50K GTPI +2166 G
840003006227721 100%RHA-NA
3-02 87 VVVVV — 11/13/2009

PTA	+1286M	+85F	+52P	78%R	4/2013
PTA	+599NM	+.14%F	+.05%P		
PTA	+2.2PL	2.69SCS	-.7DPR	7%DCE	
PTA	+2.24T	+1.94UDC	+2.14FLC	80%R	4/2013

LADYS-MANOR PL SHAMROCK-ET — P9 50K GTPI +2337 G
USA 68977120 100%RHA-NA TR TV TL TY TD
2-06 85 V+VV — 09/11/2009

PTA	+1996M	+69F	+53P	76%R	4/2013
PTA	+789NM	-.02%F	-.03%P	100%US	
PTA	+7.1PL	2.81SCS	+.4DPR	4%DCE	
PTA	+2.92T	+2.18UDC	+1.10FLC	76%R	4/2013

RABUR GOLD PLUCK — 50K GTPI +2070 G
USA 62715236 100%RHA-NA
5-09 91 EEVEE DOM — 12/08/2005

PTA	+473M	+55F	+26P	83%R	4/2013
PTA	+541NM	+.14%F	+.04%P		
PTA	+4.2PL	2.72SCS	+.5DPR	7%DCE	
PTA	+2.44T	+1.77UDC	+2.82FLC	83%R	4/2013

	AGE	X	DAYS	MILK	DCRM	%	FAT	%	PRT	DCRC
***	2-01	3	305	26290	99	4.1	1065	3.1	808	93
***	4-05	3	305	34850	100	4.3	1515	3.2	1114	90
			365	41090	100	4.4	1798	3.3	1336	90
***	6-08	3	133	15000		3.9	582	3.0	453	
	LIFE		1507	138530		4.5	6192	3.3	4599	

LONG-LANGS OMAN OMAN-ET — 50K GTPI +2185 G
USA 135746776 100%RHA-NA TV TL TY TD
4-11 85 VVV+ GM 12/12 — 04/30/2004

PTA	+1262M	+81F	+73P	99%R	4/2013
PTA	+588NM	+.13%F	+.13%P	41%US	
PTA	+1.7PL	2.91SCS	-1.0DPR	6%DCE	
PTA	+2.17T	+1.64UDC	+1.96FLC	98%R	4/2013

VISION-GEN MAC GILD-TW — 50K GTPI +1849 G
840003001667153 100%RHA-NA
2-08 87 VVVVV — 10/24/2007

PTA	+1098M	+43F	+23P	82%R	4/2013
PTA	+363NM	+.01%F	-.04%P		
PTA	+2.3PL	2.95SCS	+.5DPR	8%DCE	
PTA	+1.75T	+1.80UDC	+1.34FLC	82%R	4/2013

	AGE	X	DAYS	MILK	DCRM	%	FAT	%	PRT	DCRC
***	2-00	3	305	29090	97	3.7	1082	3.0	868	97
			365	33760	97	3.8	1292	3.0	1020	97
***	3-07	3	305	28980	96	4.2	1204	2.9	850	96
			365	34420	96	4.2	1437	3.0	1031	96

Protein reported is true protein. 004305455 2132615 8/8/2013

Rank These Heifers

It is time to put your pedigree knowledge and evaluation skills to work! Assume you have your choice of these four heifers for your next project animal. Which one would you choose? Before looking at the pedigrees, first answer the following questions.

1. What are your goals for this heifer?

2. List the pedigree information and criteria you plan to consider when making your decision.

Now look at the four pedigrees on the following pages and rank them in the order that you would like to own the animals.

Rank the heifers in the order you would purchase them.

Which heifer would be your first choice and why?

Tanya

Official Holstein Pedigree

U.S. Registered Holsteins FOR MAXIMUM PROFIT

Holstein Association USA, Inc.

www.holsteinusa.com

100% Registered Holstein Ancestry (RHA-NA)

ERNEST-ANTHONY MS TANYA P6 PTPI +1820 — 602 — 03/03/2013 — FEMALE

USA 72869731 100%RHA-NA

PTA	+284M#	+35F#	+17P#	37%R	4/2013
PTA	+1.4PL#	2.82SCS#	-.9DPR#	8%DCE#	
PTA	+2.82T#	+1.98UDC#	+2.10FLC#	36%R	4/2013

GILLETTE BRILEA F B I-ET 50K GTPI +1806 **G**

CAN 8209524 100%RHA-NA TV TL TY

CAN EX 94 — 04/06/2000

PTA	+1556M	+42F	+37P	99%R	4/2013
PTA	+268NM	-.05%F	-.04%P	17%US	
PTA	-1.3PL	2.76SCS	-1.0DPR	5%DCE	
PTA	+1.91T	+1.30UDC	+1.66FLC	99%R	4/2013

GILLETTE BLITZ 2ND WIND-ET 50K GTPI +1549 **G**

CAN 7352248 100%RHA-NA

CAN 03Y VG 88 — 07/03/2002

PTA	+753M	+25F	+8P	90%R	4/2013
PTA	+26NM	-.01%F	-.05%P		
PTA	-.8PL	3.09SCS	-2.7DPR	9%DCE	
PTA	+2.43T	+2.07UDC	+2.15FLC	89%R	4/2013

	AGE	X	DAYS	MILK	DCRM %		FAT	%	PRT	DCRC
CAN	2-02	2	305	33077		3.6	1179	2.8	926	
			365	39096		3.6	1421	2.8	1107	

GILLETTE WINDBROOK-ETS 50K GTPI +1876 **G**

CAN 7816429 100%RHA-NA TV TL TY TD

01/08/2006

PTA	+787M	+52F	+29P	91%R	4/2013
PTA	+296NM	+.09%F	+.02%P	0%US	
PTA	+.2PL	2.95SCS	-1.7DPR	7%DCE	
PTA	+2.75T	+2.08UDC	+2.84FLC	86%R	4/2013

ERNEST-ANTHONY TAHITI-ET CTPI +1758

USA 68672191 100%RHA-NA

3-02 87 VEVVV — 03/20/2009

PTA	-219M	+17F	+5P	55%R	4/2013
PTA	+263NM	+.10%F	+.04%P		
PTA	+2.5PL	2.68SCS	-.1DPR	9%DCE	
PTA	+2.89T	+1.87UDC	+1.36FLC	56%R	4/2013

	AGE	X	DAYS	MILK	DCRM %		FAT	%	PRT	DCRC
**	1-10	2	294	19210	87	4.3	823	3.0	575	87
***	2-11	2	305	21820	93	4.9	1076	3.0	664	93
			310	22050	93	4.9	1088	3.1	673	93

BRAEDALE GOLDWYN 50K GTPI +1944 **G**

CAN 10705608 100%RHA-NA TV TL TY

CAN 08Y GP 84 GM 12/11 — 01/03/2000

PTA	+68M	+35F	+15P	99%R	4/2013
PTA	+371NM	+.12%F	+.05%P	8%US	
PTA	+1.7PL	2.63SCS	-.2DPR	6%DCE	
PTA	+3.00T	+2.57UDC	+2.46FLC	99%R	4/2013

ERNEST-ANTHONY TARA-ET CTPI +1549

USA 134816717 100%RHA-NA

9-06 92 EEVVE 3E — 12/14/2003

PTA	-85M	+13F	+5P	74%R	4/2013
PTA	+89NM	+.06%F	+.03%P		
PTA	+1.2PL	2.80SCS	-.7DPR	12%DCE	
PTA	+2.04T	+1.32UDC	+.70FLC	73%R	4/2013

	AGE	X	DAYS	MILK	DCRM %		FAT	%	PRT	DCRC
***	2-05	2	305	18300	94	4.1	751	3.2	578	94
			359	21290	94	4.2	900	3.2	689	94
**	3-07	2	305	24300	92	5.3	1280	3.4	838	92
			321	25170	92	5.2	1319	3.5	871	92
***	5-05	2	305	28060	93	4.1	1158	3.1	877	93
			365	33230	93	4.2	1394	3.2	1069	93
**	6-11	2	305	28590	90	4.1	1166	3.4	969	90
			314	29140	90	4.1	1190	3.4	986	90
**	8-01	3	305	27490	90	4.3	1187	2.8	780	90
	LIFE		1665	136360		4.4	5992	3.2	4398	

Protein reported is true protein. 004305455 2132625 8/8/2013

Emily

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U.S. Registered Holsteins FOR MAXIMUM PROFIT

Holstein Association USA, Inc.

www.holsteinusa.com

100% Registered Holstein Ancestry (RHA-NA)

HILROSE HERO EMILY P6 PTPI +1824 — 03/10/2013 — 1095 FEMALE

USA 71480250 100%RHA-NA

PTA	+182M#	+34F#	+11P#	38%R	4/2013
PTA	+.5PL#	2.90SCS#	+.4DPR#	8%DCE#	
PTA	+2.97T#	+2.48UDC#	+1.89FLC#	38%R	4/2013

JENNY-LOU MRSHL TOYSTORY-ET 50K GTPI +1799 **G**

USA 60372887 100%RHA-NA TR TV TL TY TD

GM 8/10 — 05/07/2001

PTA	+998M	+34F	+30P	99%R	4/2013
PTA	+275NM	-.01%F	+.00%P	39%US	
PTA	-.1PL	2.94SCS	-.3DPR	6%DCE	
PTA	+2.03T	+1.92UDC	+1.33FLC	99%R	4/2013

SIEMERS DURHAM HAST 4358-ET IMP GTPI +1676 **G**

USA 60404488 100%RHA-NA TR TV

3-04 91 EEEEE GMD — 06/17/2001

PTA	-337M	+36F	+2P	88%R	4/2013
PTA	+156NM	+.19%F	+.05%P		
PTA	+.6PL	3.07SCS	-.2DPR	9%DCE	
PTA	+2.26T	+2.16UDC	+1.74FLC	84%R	4/2013

	AGE	X	DAYS	MILK	DCRM	%	FAT	%	PRT	DCRC
***	1-11	3	269	26100		3.9	1020	3.0	795	
**	2-10	3	305	40640	86	4.2	1692	3.2	1288	86
			365	46270	86	4.4	2017	3.2	1496	86

SIEMERS TOYS HERO 9701-ET 50K GTPI +2011 **G**

USA 62663985 100%RHA-NA TR TV TL TY TD

4-04 92 EEVE GM 8/12 — 09/25/2006

PTA	+60M	+54F	+7P	95%R	4/2013
PTA	+357NM	+.20%F	+.02%P	100%US	
PTA	+.8PL	2.94SCS	+.8DPR	7%DCE	
PTA	+3.66T	+3.71UDC	+2.52FLC	92%R	4/2013

DEN-K MARSHALL LL LAURIN 50K GTPI +1498 **G**

USA 132480026 100%RHA-NA TR TV TL TD

5-07 94 EEEE — 12/02/2001

PTA	+534M	+37F	+15P	99%R	4/2013
PTA	+78NM	+.07%F	+.00%P	49%US	
PTA	+.1PL	2.93SCS	-1.3DPR	8%DCE	
PTA	+1.17T	+.64UDC	-.11FLC	99%R	4/2013

BUDJON-JK LAURIN EINSLIE-ET CTPI +1625

USA 140448339 100%RHA-NA

3-10 90 EEEVE — 09/02/2009

PTA	+303M	+13F	+14P	55%R	4/2013
PTA	+95NM	+.01%F	+.02%P		
PTA	+.2PL	2.86SCS	-.1DPR	9%DCE	
PTA	+2.28T	+1.24UDC	+1.26FLC	61%R	4/2013

	AGE	X	DAYS	MILK	DCRM	%	FAT	%	PRT	DCRC
***	2-06	2	305	30040	95	4.0	1208	2.9	880	95
			337	32720	95	4.0	1323	3.0	969	95

BUDJON-JK LINJET EILEEN-ET IMP GTPI +1461 **G**

USA 125791216 100%RHA-NA

12-03 96 EEEEE 4E GMD DOM — 10/24/1998

PTA	-680M	-34F	-9P	94%R	4/2013
PTA	-119NM	-.04%F	+.05%P		
PTA	-.3PL	2.87SCS	+1.1DPR	11%DCE	
PTA	+2.18T	+1.69UDC	+2.09FLC	92%R	4/2013

	AGE	X	DAYS	MILK	DCRM	%	FAT	%	PRT	DCRC
***	2-05	2	305	25510	94	3.8	961	3.2	828	94
			365	30430	94	3.7	1138	3.3	1019	94
***	3-07	2	305	35010	93	3.5	1234	3.1	1072	93
			365	40300	94	3.5	1428	3.1	1266	94
***	5-06	2	305	38550	94	3.6	1406	3.0	1167	94
			365	44700	94	3.7	1647	3.1	1383	94
***	11-09	2	305	30590	94	3.5	1077	3.0	907	94
			365	34030	94	3.5	1204	3.0	1016	94
***	13-06	2	225	18720		3.2	608	2.8	527	
	LIFE		2106	194050		3.6	6935	3.2	6152	

ALL-AMERICAN 5Y COW 2004
RESERVE ALL-AMERICAN 6Y+ COW 2005
1st MID-W SPR NAT 6Y+, SR & GR CH 2005
1st MID-W SPR NAT CHAMP BRED & OWNED 2005
1st MID-W SPR NAT 4Y COW 2003

Protein reported is true protein.

004305664 2132856 8/9/2013

Riely

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www.holsteinusa.com

98% Registered Holstein Ancestry (RHA-NA)

MS TIGER-LEA BRST RIELY-RED PTPI +1710 **M** — 5646 — 03/19/2013 — FEMALE
USA 71708870 98%RHA-NA

MACE YIELD EVALUATION

PTA	-226M#	+7F#	+11P#	28%R	4/2013
PTA	+1.3PL#	3.02SCS#	-.8DPR#	7%DCE#	
PTA	+2.79T#	+2.49UDC#	+1.89FLC#	26%R	4/2013

SCIENTIFIC DESTRY-ET 50K GTPI +1940 **G**
USA 138122625 100%RHA-NA RC TV TL TY
4-04 88 VEVV 12/23/2006

PTA	-399M	+0F	+12P	99%R	4/2013
PTA	+340NM	+.06%F	+.09%P	66%US	
PTA	+3.3PL	2.72SCS	+1.7DPR	5%DCE	
PTA	+3.02T	+2.90UDC	+1.35FLC	98%R	4/2013

REGANCREST MB BREYELL-ET 50K GTPI +1570 **G**
USA 63606863 100%RHA-NA RC
12/03/2007

PTA	+585M	+6F	+15P	84%R	4/2013
PTA	-22NM	-.06%F	-.01%P		
PTA	-.8PL	3.12SCS	-2.0DPR	9%DCE	
PTA	+2.72T	+2.20UDC	+2.03FLC	78%R	4/2013

LOOKOUT P REDBURST-RED-ET P8 50K GTPI +1941 **G**
CAN 106030980 100%RHA-NA TV TL TY TD
03/27/2010

PTA	+185M	+12F	+22P	75%R	4/2013
PTA	+305NM	+.02%F	+.07%P	100%US	
PTA	+2.4PL	2.88SCS	+.3DPR	6%DCE	
PTA	+3.23T	+2.93UDC	+2.28FLC	74%R	4/2013

TIGER-LILY ABSOL RONNI-RED PTPI +1479 **M**
USA 69862959 96%RHA-NA
2-07 87 E+E+E 12/21/2010

MACE YIELD EVALUATION

PTA	-637M#	+2F#	-1P#	37%R	4/2013
PTA	+.2PL#	3.15SCS#	-1.8DPR#	8%DCE#	
PTA	+2.34T#	+2.04UDC#	+1.50FLC#	31%R	4/2013

APPLES ABSOLUTE-RED-ET P8 50K GTPI +1612 **G**
USA 139358472 100%RHA-NA CV TL TY TD
5-08 94 EEVE 09/04/2007

PTA	-1368M	+22F	-1P	96%R	4/2013
PTA	-28NM	+.29%F	+.16%P	83%US	
PTA	+.1PL	3.38SCS	-3.5DPR	9%DCE	
PTA	+3.84T	+3.65UDC	+2.72FLC	94%R	4/2013

TIGER-LILY AMERY RHONDA-RED PTPI +1345 **M**
USA 65658187 93%RHA-NA
3-05 85 VVF+V 12/01/2008

MACE YIELD EVALUATION

PTA	+94M	-19F	-1P	53%R	4/2013
PTA	-10NM	-.09%F	-.01%P		
PTA	+.2PL	2.91SCS	+.0DPR	7%DCE	
PTA	+.83T#	+.42UDC#	+.28FLC#	31%R	4/2013

	AGE	X	DAYS	MILK	DCRM	%	FAT	%	PRT	DCRC
**	2-00	3	275	21370	88	3.5	743	2.9	628	88
**	3-00	3	305	28560	89	3.3	946	2.9	837	89
			345	31390	89	3.3	1041	3.0	932	89

Protein reported is true protein. 004305664 2132859 8/9/2013

Acorn

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100% Registered Holstein Ancestry (RHA-NA)

EVER-GREEN-VIEW ACORN-ET P9 PTPI +2145 — 03/05/2013 — 430 FEMALE

USA 72332684 100%RHA-NA

PTA	+1115M#	+60F#	+43P#	45%R	4/2013
PTA	+3.6PL#	2.63SCS#	+.6DPR#	7%DCE#	
PTA	+2.18T#	+1.89UDC#	+1.87FLC#	44%R	4/2013

CO-OP BOSSIDE MASSEY-ET P9 50K GTPI +2239 G

USA 63026939 100%RHA-NA TV TL TY

GM 12/12 — 02/05/2007

PTA	+1283M	+71F	+60P	99%R	4/2013
PTA	+702NM	+.09%F	+.08%P	86%US	
PTA	+2.9PL	2.50SCS	+.2DPR	7%DCE	
PTA	+1.84T	+2.14UDC	+1.59FLC	96%R	4/2013

BROEKS APPLE-ET 50K GTPI +2050 G

USA 139206896 100%RHA-NA

3-05 87 EVV+V — 05/19/2008

PTA	+947M	+49F	+25P	80%R	4/2013
PTA	+492NM	+.05%F	-.01%P		
PTA	+4.3PL	2.75SCS	+.9DPR	6%DCE	
PTA	+2.52T	+1.63UDC	+2.14FLC	81%R	4/2013

	AGE	X	DAYS	MILK	DCRM %		FAT	%	PRT	DCRC
***	2-04	3	305	39130	100	3.9	1538	2.9	1151	100
			365	46930	100	3.9	1852	3.0	1400	100

MASCOL-ET 50K GTPI +1887 G

DEU 578891748 100%RHA-NA TV TL

GM 4/11 — 07/13/2000

PTA	+377M	+50F	+34P	99%R	4/2013
PTA	+534NM	+.14%F	+.09%P	1%US	
PTA	+3.7PL	2.65SCS	+1.0DPR	7%DCE	
PTA	+.59T	+.51UDC	+.64FLC	98%R	4/2013

COYNE-FARMS YELENA CRI-ET 50K GTPI +1761 G

USA 61376428 100%RHA-NA TV

2-08 85 +VV+V GMD DOM — 08/20/2004

PTA	+1019M	+23F	+32P	94%R	4/2013
PTA	+296NM	-.05%F	+.01%P		
PTA	+1.1PL	2.82SCS	+.0DPR	9%DCE	
PTA	+1.21T	+1.40UDC	+1.34FLC	89%R	4/2013

	AGE	X	DAYS	MILK	DCRM %		FAT	%	PRT	DCRC
*	1-11	3	305	31610	102	3.6	1152	3.0	956	92
			365	36930	102	3.6	1336	3.1	1129	92
**	6-10	2	101	7250		3.4	245	2.6	191	

WINDY-KNOLL-VIEW PRONTO-ET 50K GTPI +1794 G

USA 132815961 100%RHA-NA TR TV TL TY TD

5-08 95 EEEE — 03/01/2002

PTA	+747M	+19F	+14P	99%R	4/2013
PTA	+281NM	-.03%F	-.03%P	75%US	
PTA	+4.1PL	3.19SCS	+1.7DPR	8%DCE	
PTA	+1.95T	+1.20UDC	+1.95FLC	99%R	4/2013

WABASH-WAY ARLEIGH-ET 50K GTPI +1912 G

USA 137367191 100%RHA-NA

3-07 88 EVV+V GMD — 03/23/2006

PTA	+1088M	+55F	+34P	85%R	4/2013
PTA	+369NM	+.06%F	+.00%P		
PTA	+1.4PL	2.77SCS	-.3DPR	6%DCE	
PTA	+2.04T	+1.31UDC	+1.28FLC	85%R	4/2013

	AGE	X	DAYS	MILK	DCRM %		FAT	%	PRT	DCRC
***	2-02	3	305	36080	99	3.9	1396	3.1	1125	99
			365	44480	99	3.9	1722	3.1	1388	99

Protein reported is true protein. 004305664 2132861 8/9/2013

Answers

Test Your Pedigree Knowledge

1. P9
2. +2332
3. Predicted Transmitting Ability
4. 86 and 3 years and 11 months
5. Paternal grandsire
6. Dam – Wormont Baxter Alexa
7. 91%
8. +23
9. De-Su Oman 6121-ET
10. Ensenada Taboo Planet-ET (paternal grandsire)
11. 1141
12. USA 132973942 100%RHA
13. December 30, 2011
14. 20,780
15. +7.5
16. +3.02
17. 9K
18. 93% RHA
19. +.02%
20. Wormont Observer Alexis
21. Somatic Cell Score

Practicing Pedigree Comparisons

1. A
2. B
3. A
4. A
5. A
6. A
7. B
8. B
9. A
10. A
11. B
12. B
13. A
14. B

Educational Workbooks

A variety of educational workbooks are available at www.holsteinfoundation.org

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