

# 2019 FIFTY-SIXTH ANNUAL DAIRY HEIFER CONTEST



## Dairy Heifer Contest-Youth Grades 6-12

<p>1- Pappys Avalnch Ready-Red-ET      Pappys Farm Born 12-2-18 (dam picture above)</p> <p>Oster Clipmaster Clippers      Smith and Edwards Company, Ogden, UT</p> <p>\$200 Calf Award      Wescor, Inc. Manufacturer of Mas-D-Tec Logan, UT</p> <p>\$175 Calf Award<sup>2</sup>      Utah Farmers Union &amp; Richmond B&amp;W</p>	<p>2- Trip (\$500) to WDE      Mid-America Select National FFA, World Ag      Sires Expo, or NAIDC</p> <p>\$400 USU Scholarship<sup>1</sup>      Utah Farm Bureau and DHI-Provo Computing Center</p> <p>\$350 USU Scholarship<sup>1</sup>      Intermountain Farmers Assn. Salt Lake City, UT</p> <p>\$200 USU Scholarship<sup>3</sup>      Gossner Foods, Inc. Logan, UT</p>
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<sup>1</sup>To receive the scholarship, a winner must be a full-time student enrolled in the College of Agriculture and Applied Sciences, Utah State University. Contact the contest coordinator after you are enrolled at USU. Scholarships and trip money need to be used within 5 years.

<sup>2</sup> Calf award can be obtained by presenting proof of purchase to the contest coordinator.

<sup>3</sup> To receive the scholarship, the winner must be enrolled at Utah State University.

**Previous heifer and trip winners are eligible for other rewards.**

(Use additional paper to answer questions)

## MILK PROTEIN

The a2 milk company has been aggressively advertising their products to consumers. We have known for decades that milk from some cows is better for cheese making than milk from other cows. All of this buzz is about milk protein. There are many specific proteins (>40), naturally occurring in milk. Most of these proteins can be classified in 3 main groups, they are: Casein, Whey, and Hormones. Grades 6-9 answer questions 1-7 below. Grades 10-12 answer questions 1-11 below.

- 1- Protein molecules contain what 4 elements from the Periodic Table of elements?
- 2- Above the molecular level, what are the "Building Blocks" of protein?
- 3- List 5 essential amino acids and 5 nonessential ones.
- 4- One of the caseins in milk is called Beta Casein. It commonly comes in two types, that geneticists call alleles: A1 and A2. Protein production in milk is dictated by the animal's genes. Any given cow gets half of her genes from her dam and half from her sire. A cow that is homozygous for A2 (genotype A2A2) is expected to have only A2 beta casein in her milk. A cow that is heterozygous for beta casein (genotype A1A2) is expected to produce milk with both beta casein A1 and A2. A cow that is homozygous for A1 (genotype A1A1) is expected to produce milk with A1 beta casein only. The a2 milk company claims to market milk that has only A2 beta casein. If I have a heifer that has beta casein genotype of A1A2 and I breed her to a bull that has the same genotype (A1A2), what are the genetic possibilities for the resulting calf? What is my chance (%) of getting an A2A2 calf? (Use a Punnett square, show your work)
- 5- Another casein in milk is called Kappa Casein. The 4 alleles for kappa casein are: A, B, C, and E. A and B are most common in dairy cows in the US. If I have a heifer that has genotype AB for kappa casein and I breed her to a bull that is also AB, what are the possible kappa casein genotypes of the calves? What is my chance (%) of getting a BB calf? (Use a Punnett square, show your work)
- 6- Another kind of protein that comes from a cow's udder, is found in colostrum. Colostrum, is defined as the first milk that comes from a mammal's udder after giving birth. Calves need to receive \_\_\_\_\_% of their body weight in high quality colostrum within \_\_\_\_\_ hours after being born. (Please fill in the blanks). Colostrum quality is based on the concentration of special proteins called Immunoglobulins (aka IgG or antibodies). Explain what immunoglobulins are, what they do, and why they are not as effective for the health of the calf when the calf is a week old, compared to when it is a few hours old.
- 7- What are your plan for the heifer should you win her? If you have won a heifer in the past, explain what you have done with her and what her current status is.
  
- 8- Pre-partum cows normally take about 30 days accumulating IgG's in their udder. On most dairies, this process begins in the far-off dry pen and is ongoing while the cows are in the close-up dry pen. Name 4 things that could pre-dispose cows to providing low quality (low antibody concentration) colostrum for their calf. What is the name of the tool that measures colostrum quality.
- 9- In paragraph, explain what is significant about A2 milk. What specific consumers are the target for a2 milk company's advertising and why would the consumer be willing to pay more for the milk?
- 10- In a paragraph, explain why a cheesemaker should be interested in getting milk from a cow with BB genotype for kappa casein, rather than AE.
- 11- What are your plans after high school graduation? If you have won the trip in the past, tell where you went and what you did.

**CONTEST RULES**

- WHO - Any one in school grades 6-12. Previous calf and trip winners (if eligible) may compete for prizes other than the calf and the trip.
- WHAT - Fill out the ENTRY INFORMATION on the back clearly and completely, including your phone number. Then answer the contest questions on additional pages as needed. Information for answering the questions can be obtained from any available sources.
- WHEN - The contest officially starts **today**, and continues through midnight, **Friday, May 3, 2019** . Entries may be faxed or emailed to 435-245-7680 or [justin.jenson@usu.edu](mailto:justin.jenson@usu.edu)
- FINALISTS - Contestants performing the best on the written application will be interviewed by the final selection judges. Interviews will be held at Richmond Black and White Days on **May 14, 2019**, beginning at 5:00 pm. The finalists will be notified by **Wednesday, May 8, 2019**, to set up a time for the interview. The panel of judges may come from the dairy industry and contest sponsors. Entrants will be judged as to their knowledge of the questions on the application, the dairy industry, citizenship, and their participation in agricultural and community activities. Contest sponsors reserve the right to make awards different from the guidelines noted herein.

Prizes will be awarded at 5:30 p.m. **Tuesday, May 15, 2019**, at the Richmond Black and White Sale. Finalists should be present for the presentation at that time. If you have any questions, contact Justin Jenson , [justin.jenson@usu.edu](mailto:justin.jenson@usu.edu) or (435) 881-6443.

**ENTRY INFORMATION**

Name \_\_\_\_\_ Year in School \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Are You a Member of FFA \_\_\_\_\_ Of 4-H \_\_\_\_\_ Phone ( ) \_\_\_\_\_

Vocational Agriculture Teacher \_\_\_\_\_ Signature \_\_\_\_\_

or 4-H Leader \_\_\_\_\_ Signature \_\_\_\_\_

Parent or Guardian \_\_\_\_\_ Signature \_\_\_\_\_

**E-Mail To: [justin.jenson@usu.edu](mailto:justin.jenson@usu.edu) Fax To: 435-245-7680**

**REFERENCES**

It is the intention that each applicant acquaint himself/herself with dairying from the various sources and not merely have a parent, leader, or other adult provide the answers for entering the contest. Valuable information on dairying can be obtained from the following sources:

**WEB SITES**

- <http://www.ext.usu.edu/ag/dairy/index.htm>
- [www.usjersey.com](http://www.usjersey.com)
- [www.holsteinusa.com](http://www.holsteinusa.com)
- [www.holsteinfoundation.org](http://www.holsteinfoundation.org)
- [www.calfnotes.com](http://www.calfnotes.com)
- [www.dasc.vt.edu/youth/bowlmat.html](http://www.dasc.vt.edu/youth/bowlmat.html)
- [www.dailydairyreport.com](http://www.dailydairyreport.com)
- [www.thebullvine.com](http://www.thebullvine.com)
- [www.cowsmo.com](http://www.cowsmo.com)
- [www.dairyagendatoday.com](http://www.dairyagendatoday.com)

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**DAIRY PUBLICATIONS AND REPORTS**

- Hoard's Dairyman
- Dairy Herd Management
- Holstein World
- The Progressive Dairyman
- USU Dairy Newsletter
- Utah Farmer-Stockman
- Milk and Dairy Beef Quality Assurance Program Producer Manual
- The Western Dairyman