



# Igenity<sup>®</sup>

## Bovine Congestive Heart Failure Reporting through NEOGEN<sup>®</sup>

Bovine Congestive Heart Failure (BCHF) is a significant cause of death in feedlot cattle in the Western Great Plains of North America. Mortality from BCHF has reached 7% in severely affected cattle pens, with annual losses exceeding \$250,000 at a single operation.

Igenity<sup>®</sup> BCHF is based on research conducted at the U.S. Meat Animal Research Center and published in 2019<sup>1</sup>. Using matched pairs of BCHF-affected and unaffected pen mates from more than 30 different ranch sources, researchers tested the bovine genome and discovered two single nucleotide polymorphisms (SNP) found to be more common among BCHF-affected animals.

### How Does it Work?

The current test detects a SNP in each of the two best-associated regions. The animal's genotype for these two most informative SNPs determines how many BCHF risk factors it has: zero, one, or two.

### How Results are Reported:

Number of BCHF Risk Factor Alleles (BCHF2, BCHF5)	Breeding Rank, USDA <sup>1</sup>	Breeding Rank, Igenity <sup>2</sup>	Individual Risk <sup>3</sup>
0,0	1	1	1x
0,1	2	2	1x
1,0	2	3	7.5x
1,1	3	4	7.5x
2,0	3	5	7.5x
0,2	3	6	7.5x
2,1	4	7	7.5x
1,2	4	8	15x
2,2	5	9	15x

<sup>1</sup> The relative rank of an animal from best (1) to worst (5) for breeding purposes, determined by USDA.

<sup>2</sup> The relative rank of an animal from best (1) to worst (9) for breeding purposes, as reported by Igenity.

<sup>3</sup> Increased likelihood an animal will present with BCHF itself. Please note, individual risk is not additive for both variants (BCHF2, one or two copies; BCHF5, two copies).

The two-SNP BCHF test is best at identifying animals that will not become BCHF cases. If an animal has neither of the two risk factors for BCHF, there is only a 1% chance that they will become a BCHF case. **Note:** Not all cattle with both risk factors will develop BCHF.

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## Pathways to Order and Interpret Results

### **BCHF for Breeding Decisions: Igenity<sup>®</sup> Beef**

Similar to coat color, BCHF breeding rank should be used as a management tool. Cattle producers affected by BCHF can benefit by selecting animals that have lower BCHF breeding rank values. Reducing the BCHF risk factors in breeding herds is predicted to reduce the disease's impact on subsequent calf crops. The percentage of sires without both risk factors varies by breed.

Breeding Rank	Potential of Risk Allele Transmission to Calves
1	0%
2, 3	25%
4, 5, 6	50%
7, 8	75%
9	100%

### **BCHF for Individual Animal Management: Igenity Feeder**

Identifying which feedlot cattle have both risk factors may help identify the smallest group of animals that will benefit from alternative management to limit BCHF development.

Sorting of animals into the 15x or 7.5x risk group pens may be a way to increase the efficiency of labor to monitor animals for visual cues of BCHF and choose marketing windows appropriate for those groups.

Knowledge of BCHF risk factor status can also be a marketing tool for feeder cattle with decreased risk.

<sup>1</sup>For more information on BCHF and research conducted by the USDA:

