



GENETIC TRAITS AND CARRIER CODES

C = carrier

F = tested free or non-carrier

S = tested true carrier (homozygous)

Master List of Genetic Codes and Carrier Codes

The traits below are officially recognized genetic conditions by the WHFF. Herdbooks and other organizations are encouraged to use the codes below to record direct gene test results for these traits, to facilitate standardized exchange of information between organizations.

Gene Name	Description	Gene and Expression Code
BLAD	Bovine Leukocyte Adhesion Deficiency (deficiency of a normally occurring protein needed for white blood cells or leukocytes, which are body's infection fighters)	BLC = tested carrier of BLAD BLF = tested non-carrier of BLAD
Mule foot	Mule-Foot (toes of foot are joined, giving animal a single hoof, instead of cloven ones)	MFC = tested carrier of Mule foot MFF = tested non-carrier of Mule foot
DUMPS	Deficiency of Uridine Monophosphate Synthase (one of many enzymes contributing to normal metabolic processes)	DPC = tested carrier of DUMPS DPF = tested non-carrier of DUMPS
CVM	Complex Vertebral Malformation (causes still-born calves, abortions, and early embryonic losses)	CVC = tested carrier of CVM CVF = tested non-carrier of CVM
Brachyspina	Brachyspina (causes abortion and stillborn, shortened spinal cord, long legs and abnormal organs)	BYC = tested carrier of Brachyspina BYF = tested non-carrier of Brachyspina
Polled	Animals without horns (reported born hornless - Not Tested).	POR = coded by owner, no genetic test
Polled (Current-Indirect Test)	Indirect Test	POS = tested true polled (homozygous PP) POC = tested carrier of polled (heterozygous Pp) POF = tested free of polled



Polled (Future) When a direct test becomes available. Direct test code will "trump" test code on animal record

Cholesterol Deficiency

CDF = tested non-carrier / free of cholesterol deficiency
CDC = tested carrier of cholesterol deficiency (heterozygous)
CDS = tested true carrier of cholesterol deficiency (homozygous)

Early Onset Muscle Weakness

MWF = tested non-carrier / free of Early Onset Muscle Weakness
MWC = tested carrier of Early Onset Muscle Weakness (heterozygous)
MWS = tested true carrier of Early Onset Muscle Weakness (homozygous)

Genetic Conditions under Investigation

The trait(s) below are being actively investigated by the WHFF. Herdbooks and other organizations are encouraged to use the codes below to record direct gene test results for these traits, when available. Anyone with information related to a trait on this list regarding peer reviewed scientific papers, known testing options or data regarding the frequency of the trait within a Holstein population is encouraged to email that information to worldholstein@gmail.com.

Gene Name	Description	Gene and Expression Code
BLIRD	Bovine Lymphocyte Intestinal Retention Defect	LRF = tested non-carrier / free of BLIRD LRC = tested carrier of BLIRD (heterozygous) LRS = tested true carrier of BLIRD (homozygous)



Suggested Genetic Conditions under Investigation

The trait(s) below are currently being monitored by the WHFF. Herdbooks and other organizations are encouraged to use the codes below to record direct gene test results for these traits, when available.

Gene Name	Description	Gene and Expression Code
SLICK	S plus a variant number	

Archived Genetic Conditions

The traits below were included on the WHFF Master List in the past, but have fallen to a low level of concern in the Holstein breed and have therefore been removed from that list. Herdbooks and other organizations are encouraged to maintain any information they might have on these conditions, and to use the codes below to record direct gene test results for these traits, when available.

Gene Name	Description	Gene and Expression Code
CIT	Citrullinemia (accumulation of ammonia and other toxics in blood in baby calves)	CNC = tested carrier of Citrullinemia CNF = tested non-carrier of Citrullinemia
Factor X1	Factor X1 (blood clotting disorder)	XIC = tested carrier of Factor X1 XIF = tested non-carrier of Factor X1