

# Genetic Recessives and Colour Codes

endorsed by World Holstein-Friesian Federation

**C = Carrier**

**F = tested free or non-carrier**

## Genetic Recessive and Carrier Codes

Gene Name	Description	Gene and Expression Code
<b>BLAD</b>	<b>Bovine Leucocyte Adhesion Deficiency</b> (deficiency of a normally occurring protein needed for white blood cells or leukocytes, which are body's infection fighters)	<b>BLC = tested carrier of BLAD</b> <b>BLF = tested non-carrier of BLAD</b>
<b>Mulefoot</b>	<b>Mule-Foot</b> (toes of foot are joined, giving animal a single hoof, instead of cloven ones)	<b>MFC = tested carrier of Mulefoot</b> <b>MFF = tested non-carrier of Mulefoot</b>
<b>DUMPS</b>	<b>Deficiency of Uridine Monophosphate Synthase</b> (one of many enzymes contributing to normal metabolic processes)	<b>DPC = tested carrier of DUMPS</b> <b>DPF = tested non-carrier of Dumps</b>
<b>CVM</b>	<b>Complex Vertebral Malformation</b> (causes still-born calves, abortions, and early embryonic losses)	<b>CVC = tested carrier of CVM</b> <b>CVF = tested non-carrier of CVM</b>
<b>Factor X1</b>	<b>Factor X1</b> (blood clotting disorder)	<b>XIC = tested carrier of Factor X1</b> <b>XIF = tested non-carrier of Factor X1</b>
<b>Citrullinemia</b>	<b>Citrullinemia</b> (accumulation of ammonia and other toxics in blood in baby calves)	<b>CNC = tested carrier of Citrullinemia</b> <b>CNF = tested non-carrier of Citrullinemia</b>

## Coat/Hair Colour Codes

Code	Description
<b>B&amp;W</b>	<b>Black and White</b>
<b>R&amp;W</b>	<b>Red and White</b>
<b>B/R</b>	<b>Black/Red</b> (primarily B&W although exhibits reddish peculiar hair patterns—muzzle, ears, dorsal stripe, etc.)
<b>AW</b>	<b>All White</b>
<b>AB</b>	<b>All Black</b>
<b>AR</b>	<b>All Red</b>
<b>IC</b>	<b>Irregular or other colour</b> (non-typical animals)

## Coat/Hair Colour Carrier Codes

Coat Colour Carrier Gene	Description	Gene and Expression Codes
<b>Red</b>	<b>Red gene</b>	<b>RC = carrier of Red gene</b> <b>RF = tested non-carrier of Red gene</b>
<b>Black/Red</b>	<b>Black/red gene</b>	<b>BRC = carrier of black/red gene</b>
<b>Black</b>	<b>Black gene</b>	<b>BC = carrier of black gene</b>
<b>Variant Red</b>	<b>Variant red gene</b>	<b>VRC = carrier of variant red gene</b>

## Birth Codes (Secondary)

Code	Description
<b>MBM</b>	<b>Multiple Birth Mix</b>
<b>MB</b>	<b>Multiple Birth</b>
<b>ET</b>	<b>Embryo Transfer (regular)</b>
<b>ETM</b>	<b>Embryo Transfer Manipulation (split or cloned)</b>
<b>ETA</b>	<b>Embryo Transfer Adult Clone</b>

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