Dexter Dun Color –
Brown Mutation Discovery

Written by John Potter

When I began raising Dexters in 1992, I assumed that dun colored Dexters were the result of a brown mutation similar to that which exists in other species of mammals. Until the summer of 2001 all of the cattle geneticists and literature that I consulted assured me that no brown mutation had been discovered in cattle.

When Dr. Carol Davidson conducted her color studies in the late 1990's, she confirmed the genetic basis of our red colored Dexters and suggested the probability that our Dexters are relatively unique from the standpoint that Ee/Ee Dexters are red –for example, the renowned Dexter bull Cornahir Outlaw. This is the same E locus genotype that most Jerseys and brown Swiss have, and these breeds are certainly not red in appearance.

Since that time I have found that Ee/Ee anaimls in a number of other breeds including Tarentaise, Red Poll, and Maine-Anjou, are phenotypically red.

In Dr. Davidson's research, dun Dexters turned up as black animals at the red locus. She then assumed that dun Dexters are the result of a dilution similar to the ones that exist in other breeds of cattle such as Simmentals, Highlands and Galloways.

In July 2001 I succeeded in convincing Dr. Sheila M. Schmutz, a prominent geneticist at the University of Saskatchewan, that Dexter dun maybe unique and would be worth investigating. I am very pleased that our resulting research project that began in October 2001, culminated in the discovery of the first brown mutation ever confirmed in cattle. As of the date of the conclusion of the research project, out of 121 cattle from 19 other breeds, the brown mutation had been found only in the Dexter breed.

One notable observation that was first made in this research project and confirmed in subsequent testing is the fact that red is epistatic to Dexter dun – Animals that are homozygous for both red and dun are phonotypically red.

The Dexter dun study concluded with the publication in 2003 of ***"TYRP1 is associated with dun coat color in Dexter cattle or how now brown cow?"*** by the International Society for Animal Genetics in their publication Animal Genetics, 34, 169-175

Epistasis - where an allele of one gene hides or masks the visible output, or phenotype, of another gene. Epistasis is entirely different from dominant and recessive, which are terms that apply to different alleles of the same gene

CATTLE BREEDS TESTED FOR BROWN

Angus

Belgian Blue

Blonde d'Aquitane

Braunvieh

Brown Swiss

Canadienne

Charolais

Flamonde

Galloway

Gelbvieh

Guernsey

Hereford

Highland

Holstein

Jersey

Limousin

Shorthorn

Simmental

Tarentaise