

Protoporphyrin - "Proto"

"Proto" is a genetic disorder in Limousin cattle that results in sensitivity to light. The disease impacts on the function of the ferrochelatase gene and animals develop scabs and open sores when exposed to sunlight (Figure 1.)



Figure 1. Photosensitivity (protoporphyrin). Notice skin lesions due to sunlight.
Figure adapted from BCH-1900 Beef Cattle Handbook Figure 9. www.iowabeefcenter.org/pdfs/bch/01900.pdf

Animals can be tested and are designated on CLA pedigrees by the following:

- PN** – Proto Normal (free)
- PP** – Proto Normal as determined by Pedigree
- PC** – Proto Carrier
- PD** – Proto Diseased

Inheritance Pattern

Like many genetic disorders, Proto is inherited as a simple recessive. This means only animals carrying two copies of the gene are affected. Animals with one copy of the gene are referred to as carriers.

Sample Mating of Two Carriers

	P	p
P	PP – Proto Normal	Pp – Proto Carrier
p	Pp – Proto Carrier	Pp – Proto Diseased

If two carriers are mated $\frac{1}{2}$ of the calves will be carriers and $\frac{1}{4}$ of the calves will be diseased. $\frac{1}{4}$ of the calves will also be proto normal.

Sample Mating of a Normal to a Carrier

	P	P
P	PP – Proto Normal	PP – Proto Normal
p	Pp – Proto Carrier	Pp – Proto Diseased

If a proto normal is mated to a carrier $\frac{1}{2}$ of the calves will be proto normal and $\frac{1}{2}$ will be carriers

Testing

The disorder can easily be tested for. To order a test, contact the Canadian Limousin Association.



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