

Genetically Linked Diseases in Border Collies

ABCA Health & Genetics Committee

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The ABCA Health and Genetics Committee has compiled a list of genetically linked diseases that could be present in Border Collies. This list was compiled from available scientific studies which included Border Collies regardless of subpopulation, since published studies rarely identify subpopulations within a breed (show, agility, pet, working, etc). The list includes diseases which are known to be more prevalent in other subpopulations of Border Collies (i.e. show dogs from other countries) but may still be present at some unknown very low rate in working Border Collies. Listed are upper estimates of incidence rates within our gene pool along with published inheritance modes for these diseases. Available clinical tests to identify affected dogs and genetic tests to identify carriers and affected dogs are also listed.

Disease	Estimated Incidence Rate (a)	Inheritance	Clinical Test	Genetic Test
Collie Eye Anomaly (CEA)	<2.5%	Recessive	Ophthalmological exam (b)	Optigen, Paw Print Genetics, Animal Genetics
Hip Dysplasia	<11% (c)	Complex	Radiographic: OFA, Cornell	None
Epilepsy	<5% (d)	Complex	Physical and neurological exam	None
Early Onset Adult Deafness (EOD)	Unknown	Recessive (e)	BAER test	None
Exercise-Induced Border Collie Collapse (BCC)	Unknown	Complex	None, diagnosis by exclusion	None
Imerslund-Gräsbeck Syndrome (IGS)	Rare (<0.5%) (f)	Recessive	Physical exam and bloodwork	UCDavis, Animal Genetics, Paw Print Genetics
Trapped Neutrophil Syndrome (TNS)	Rare (<0.5%) (f)	Recessive	Bone marrow biopsy	Optigen, Animal Genetics, Paw Print Genetics
Neuronal Ceroid Lipofuscinosis (NCL)	Rare (<0.5%) (f)	Recessive	Physical and MRI exams	Optigen, Paw Print Genetics, Animal Genetics
Multi-Drug Resistance Gene (MDR1)	Rare (<0.5%) (f)	Recessive	None	Vet Clinical Pharmacology Lab at WA State U, Paw Print Genetics, Animal Genetics

- a) Estimated incidence rates are for affected dogs, carrier rates will be higher
- b) Exams are recommended before 12 weeks of age
- c) Hip dysplasia rates are from OFA data for all Border Collies (any registry) where radiographs were submitted from 1974 to 2014
- d) There are no published reports for incidence in Border Collies; incidence rates for breeds have been reported to range from 0.5% to 5% with Border Collies having one of the higher incidence rates
- e) Genetic studies by Dr Mark Neff suggest (not proven) recessive inheritance
- f) Based upon published study from Border Collies without distinction of registry or country