

## Litters

A note about Belgians and Kuymal Kennels in particular. Belgian Sheepdogs have a high incidence of epilepsy.

The incidence estimate varies from a low of 9% to a high of 17%

<http://www.biomedcentral.com/content/pdf/1751-0147-50-51.pdf> (Prevalence and characteristics of epilepsy in the Belgian shepherd variants Groenendael and Tervueren born in Denmark 1995–2004)

Currently, the gene or genes behind epilepsy in Belgians is unknown. Even the mode of inheritance is not certain – it could be a recessive gene of “major effect” with a modifier, polygenetic, or even a dominant that is affected by a “repressor” gene.

<http://www.biomedcentral.com/1471-2156/12/38> (Candidate genes for idiopathic epilepsy in four dog breeds) BMC Genetics 2011, 12:38doi:10.1186/1471-2156-12-38 25 April 2011

<http://veterinaryrecord.bmj.com/content/147/8/218.abstract> Veterinary Record 2000;147:218-221 doi:10.1136/vr.147.8.218 Segregation analysis of epilepsy in the Belgian tervueren dog

<http://www.neurology.org/content/71/8/567.short> (Penetrance of LGI1 mutations in autosomal dominant partial epilepsy with auditory features)

Data (here at <http://www.biomedcentral.com/1471-2156/11/35/additional/>) indicates "incomplete penetration " Oberbauer, Anita M., Janelle M Belanger, Deborah I Grossman, Kelly R Regan

and Thomas R Famula. 2010. Genome-wide linkage scan for loci associated with epilepsy in Belgian shepherd dogs. BMC Genetics 2010 11:35.

<http://www.biomedcentral.com/content/pdf/1471-2156-11-35.pdf>

For those interested in pedigree search the following site may be of interest.

<http://www.belgian-epilepsy.dk/> (incomplete but open access database of Belgians with epilepsy)

While the incidence is high in Belgians, the problem is not unique to Belgians (Epilepsy in Irish Wolfhounds --Margret L. Casal<sup>1,\*</sup>, Richard M. Munuve<sup>1</sup>, M. Anne Janis<sup>2</sup>, Petra Werner<sup>1</sup>, Paula S. Henthorn<sup>1</sup>Article first published online: 28 JUN 2008 DOI:


10.1111/j.1939-1676.2006.tb02832.x) <http://onlinelibrary.wiley.com/doi/10.1111/j.1939-1676.2006.tb02832.x/abstract> (not open access) “During the last 15 years, breeders

have reported an increase in the proportion of Irish Wolfhounds with seizure disorders. Clinical data and pedigrees from closely related Irish Wolfhounds were collected retrospectively and analyzed. Idiopathic epilepsy was diagnosed, by exclusion of other causes for seizures, in 146 (18.3%) of 796 Irish Wolfhounds from 115 litters. .... No simple mode of inheritance explains the pattern of affected dogs in pedigrees.

Hallmarks of dominant and sex-linked inheritance were notably absent, and the segregation ratio was less than would be expected for simple autosomal recessive inheritance. Assuming all affected dogs have the same form of epilepsy, the simplest


description of the complex pattern of inheritance observed is autosomal recessive, with incomplete penetrance and male dogs at increased risk.”

With a 17% incidence, it is clear that the gene (or genes) are widespread in Belgians. Despite working for more than 25 years in avoiding this problem, in 2011, related dogs were identified as having epilepsy. The first was Midnight Acres Up at Sunrise. This dog has the following pedigree:

<p><b>Pedigree of:</b></p> <p>Midnight Acre's Up At Sunrise DN042738/05 w: 04-Aug-2003, d: 17-Feb-2011 5g COI = 8.2%, ALC = 29.0% <a href="#">[PEDIGREE w/ LINKS]</a> <a href="#">[PEDIGREE w/o LINKS]</a> <a href="#">[BREEDING INFO]</a> <a href="#">[TRIAL PEDIGREE]</a> <a href="#">[REVERSE PEDIGREE]</a></p>	<p><a href="#">Tiffany's Black Bear</a> DL883108/01 w: 01-Jun-2001 (12-03) 5g COI = 4.3%, ALC = 27.4% <a href="#">[PEDIGREE w/ LINKS]</a> <a href="#">[PEDIGREE w/o LINKS]</a> <a href="#">[BREEDING INFO]</a> <a href="#">[TRIAL PEDIGREE]</a> <a href="#">[REVERSE PEDIGREE]</a></p>	<p><a href="#">Blackfire's Wolfman's Radar</a> DL423888/01 w: 21-Feb-1992 (10-01) 5g COI = 7.8%, ALC = 48.4%</p>	<p>Ch. <a href="#">Blackfire's Wolfman Warrior</a> D600920</p>	<p>Ch. <a href="#">Blackfire's Sudden Impact</a> C.D. D507105</p>	<p>Ch. <a href="#">Blackfire's Sudden Impact</a> C.D. D507105</p>
		<p><a href="#">Tiffany's Black As Coal</a> DL447244/06 w: 29-Aug-1992 (04-99) 5g COI = 2.0%, ALC = 21.0%</p>	<p>Ch. <a href="#">Midnight Acre's Johnny B Good</a> DL347381/05</p>	<p>Ch. <a href="#">Midnight Acre's Johnny B Good</a> DL347381/05</p>	<p>Ch. <a href="#">Midnight Acre's Johnny B Good</a> DL347381/05</p>
			<p><a href="#">Tiffany's Black Velvet</a> D620615</p>	<p><a href="#">Midnight Acre's E-Z Ryder</a> D880314</p>	<p>Ch. <a href="#">Midnight Acre's E-Z Ryder</a> D880314</p>
		<p><a href="#">Midnight Acre's Ellie Mae</a> DL852416/02 w: 03-Nov-2000 (12-03) 5g COI = 5.9%, ALC = 29.0% <a href="#">[PEDIGREE w/ LINKS]</a> <a href="#">[PEDIGREE w/o LINKS]</a> <a href="#">[BREEDING INFO]</a> <a href="#">[TRIAL PEDIGREE]</a> <a href="#">[REVERSE PEDIGREE]</a></p>	<p>Ch. <a href="#">Midnight Acre's Johnny B Good</a> DL347381/05 w: 26-Sep-1990 5g COI = 4.7%, ALC = 41.9%</p>	<p>Ch. <a href="#">Blackfire's KT O'Midnight Acres</a> D807694</p>	<p>Ch. <a href="#">Blackfire's KT O'Midnight Acres</a> D807694</p>
			<p><a href="#">Midnight Acre Reverie Franki</a> DL595140/01 w: 21-Aug-1995 (01-01) 5g COI = 0.2%, ALC = 14.5%</p>	<p></p>	<p>Ch. <a href="#">Reverie Black Tie Affair (Robbie)</a> C.D.R.O.M,HIC,CGC,TDI DL353764/05</p>
				<p><a href="#">Blackfrosts Midnight X Fire (Ursa)</a> HIC,CGC DL442172/05</p>	<p>Ch. <a href="#">Blackfrosts Midnight X Fire (Ursa)</a> HIC,CGC DL442172/05</p>

Franki, the grandmother of this dog is a full sister to Korvar.

The second dog was: d'Artagnan du Volant who has the following pedigree:

<p><b>Pedigree of:</b>    <a href="#">d'Artagnan du Volant</a>  <b>M.X.,M.X.J.</b>          DN224042/04          w: 11-Jul-2008          5g COI = 0.0%, ALC = 1.6%  <a href="#">[PEDIGREE w/ LINKS]</a>  <a href="#">[PEDIGREE w/o LINKS]</a>  <a href="#">[BREEDING INFO]</a>  <a href="#">[TRIAL PEDIGREE]</a>  <a href="#">[REVERSE PEDIGREE]</a></p>	<p><b>Ch.,HCh.(DC)</b>  <a href="#">Uvar Eresha Kuymal</a>  <b>H.Ss,STDs,d,c;H.S.As,HRD1s,HTD1s,H.X.Ad,s,c,H.X.Bd,H.X.Bsc.,H.X.Cs</b>          DL781494/01          w: 20-Sep-1998 (01-02), d: 19-Jan-2009          5g COI = 0.0%, ALC = 12.9%  <a href="#">[PEDIGREE w/ LINKS]</a>  <a href="#">[PEDIGREE w/o LINKS]</a>  <a href="#">[BREEDING INFO]</a>  <a href="#">[TRIAL PEDIGREE]</a>  <a href="#">[REVERSE PEDIGREE]</a></p>	<p><b>WTCh.,HTCh.</b>  <a href="#">Nyiella Ceres Kuymal</a>  <b>HS,HX,HTD111sd,ATDscd,Ranch</b>          D951427          w: 17-Feb-1990, d: 30-May-1998          5g COI = 6.2%, ALC = 40.3%</p>
	<p><b>Ch.</b>  <a href="#">Baikadunia (Disco)</a>  <b>A.X.,A.X.J.,STDs, CGC</b>          LOSH 908541, DN028431/01 (G*)          w: 11-May-2002          5g COI = 0.0%, ALC = 8.1%  <a href="#">[PEDIGREE w/ LINKS]</a>  <a href="#">[PEDIGREE w/o LINKS]</a>  <a href="#">[BREEDING INFO]</a>  <a href="#">[TRIAL PEDIGREE]</a>  <a href="#">[REVERSE PEDIGREE]</a></p>	<p><b>Ch.</b>  <a href="#">MegaSpirit's All For One ('Atos')</a>          DL776390/, UKC P272-153          w: 20-Feb-1999          5g COI = 2.3%, ALC = 25.8%</p> <p><b>Unja d'Aljepalo (Unia)</b>          LOSH 778981          w: 12-Apr-1998          5g COI = 2.1%, ALC = 14.5%</p>

Obviously, if epilepsy is a polygenetic or a recessive gene, Uvar must carry for one or more of the applicable genes. If it is a dominant with a suppressor, there is no way to know which dog is the carrier. Consequently, anyone interested in a Kuymal dog is advised that I cannot guarantee against epilepsy. Until there is a test or at least until the gene(s) and the correct mode of inheritance is known, the only thing that can be done without reducing the gene pool to unsustainable levels, is simply to avoid a repeat breeding where epilepsy has occurred and to avoid breeding any affected dog.

Some of the dogs in my line have sacralization (last lumbar vertebrae & first sacral vertebrae are fused) - The issue of 7 vs 6 vertebrae appears to be a mere variation on the theme

and not in and of itself a problem, but if the vertebrae are misshapen, then there is a problem, so verification on the lumbar/sacral area is a good idea. It is a variable that apparently occurs often enough that OFA talks about it. From what little literature I've seen so far, there's nothing there to indicate if it's dominant/recessive/polygenetic.

There's nothing I've found so far that indicates it's anything other than a "normal variation" --- nothing has, so far, indicated that it is a harmful characteristic. In horses, Arabian horses have shorter backs and fewer vertebrae than other breeds. Obviously, it isn't a major health issue for them. From what I can get, it MAY result in less flexibility in the sacral area – but more strength due to the fused vertebrae. That may make it easier for the dogs to do jumps, a bit harder for weave poles—MAYBE. The literature I've found so far clearly says that if the hips are ok and the pelvis is not misaligned, there seems to be no problem. See

<http://s12.zetaboards.com/jackrussellnetwork/topic/34014/2/> there are several interesting posts on this site The following is one is from a Board Certified Veterinary Neurologist.

Quote:

It's not that uncommon for dogs to have 6 (or 8) lumbar vertebrae. This is usually associated with a transitional vertebra at TL or LS, for example an extra pair of ribs or sacralization of the last lumbar vertebra. This is much less common in the cervical region, although you can also see a transitional vertebra at the cervicothoracic region.

In most cases, this is an incidental finding. The biggest problem is that it can cause confusion when counting vertebra at surgery to identify the correct site. However, one study suggests that transitional vertebrae at LS in German shepherds increase the risk for degenerative lumbosacral stenosis. This study also suggests that transitional vertebrae in German shepherds are probably hereditary. I'm not aware of any other studies of this in other breeds.

Morgan JP, et al. Lumbosacral transitional vertebrae as a predisposing cause of cauda equina syndrome in German shepherd dogs: 161 cases (1987-1990). JAVMA 202:1877-1882, 1993.

“In addition, mobility of the vertebral segments from L3 to the sacrum increases exponentially in GSD, with a higher amount of translational forces cranially and rotational forces caudally. The strikingly high percentage of GSD with degeneration in the lumbosacral disk revealed in our study and others, could, therefore, be the result of increased load on that intervertebral disk.” It also indicates that if the ANGLE is wrong, there may be a problem. But it indicates that variation here does not seem to correlate with issues in the back and function of dogs.

In addition, while most of Uvar's offspring have had excellent or good hips and elbows, there has been one that had faulty elbows. This is one of the puppies born in Finland –

Cougar. This is probable OCD. I do elbow xrays of all my dogs and to my knowledge, there is nothing else that one can do regarding this. The bitch also had her elbows xrayed. OFA has information on US dogs regarding hips and elbows - <http://www.offa.org/>

For those still reading this, I do plan a litter in 2012.

Astarte Hekate Kuymal – HSAs, HTADIs  
CERF BSD 1742/2007-5 (OFA BSDEL1346F27-VP1; BSD-3629E27F-VP1)

Ch. Blackstar's Darknstormy Night R.A., T.D.  
DN034430/08, CERF BSD-1506; OFA BSD-3196E24M-PI; BSD-EL941M24-PI  
(Ranger is pictured below)

[Click here to view a pedigree of this litter](#)

