COAT INHERITANCE by Lynda Trotter 2016

http://www.ozbsd.com/coat-inheritance/coat-inheritance.html

COAT COLOUR INHERITANCE CHART

The figures below are based on the probable percentages from a litter of four puppies in each possible mating.

Regarding the grey Tervuerens - the exact genes have not yet been iscolated so I have left the simplistic examples below until the genes can be identified. Even though the genes which produce the grey Tervueren have not been iscolated, I have left the basic reference in regarding probable outcomes from litters where grey is known to be possible.

It has been genetically proven that the Belgian Shepherd has the recessive black in its array of genes, and to a much lesser degree, black and tan.

I do not claim to be an expert on the genetics of coat colour inheritance in the Belgian Shepherd - far from it. I did however want to set out a simplistic chart for those just learning to follow. However good friend Lee Jiles has made me realise that not only was there holes and errors in my firstchart - but also that I needed to go a little deeper to make it a truly useful tool. I will add further links to this page as I find relevant reference tools. If you know of useful and informative links relevant to the Belgian Shepherd please email them to me at belgianshepherds@bigpond.com.

KK = two dominant black color genes Kk = one dominant black & one nonblack color gene kk = two nonblack color genes	ay = fawn at = black-and-tan a = recessive black
 Pure Groenendael KK ayay	 Groenendael carrying Tervueren Gene Kk ayay
 Pure Tervueren kk ayay	 Tervueren with double recessive grey kk ayay
 Red Tervueren with carrying recessive grey kk ayay	 Groenendael carrying Tervueren (grey) Kk ayay

 Groenendael carrying Tervueren (red and grey) Kk ayay	 Recessive Black Groenendael kk aa
 Groenendael carrying Recessive Black Kk aa	 Tervueren carrying Recessive Black kk aya

						Both parents are dominant black and therefore all of their puppies will be pure Groenendael. Groenendael who are dominant black are known as Genotypical.
KK ayay	KK ayay	KK ayay	KK ayay	KK ayay	KK ayay	
						One parent is pure Groenendael & the other appears pure but carries the Tervueren gene. Half of the puppies will be pure Groenendael & half will lappear pure Groenendael but will carry the Tervueren gene. Groenendael carrying the Tervueren gene are referred to as Phenotypical.
KK ayay	Kk ayay	KK ayay	KK ayay	Kk ayay	Kk ayay	
						Both parents appear to be pure Groenendael but each carries the Tervueren gene. Results could be one puppy pure Groenendael, two looking pure Groenendael but carrying the Tervueren gene, & one Tervueren. The proportion thus being 1:2:1

Kk ayay	Kk ayay	KK ayay	Kk ayay	Kk ayay	kk ayay	
						Both parents are pure Tervueren and all of the resulting puppies will be the same.
kk ayay	kk ayay	kk ayay	kk ayay	kk ayay	kk ayay	
						One parent is pure Groenendael and the other is Tervueren. All puppies will be Groenendael carrying the recessive Tervueren gene.
KK ayay	kk ayay	Kk ayay	Kk ayay	Kk ayay	Kk ayay	
						One parent Groenendael carrying the recessive Tervueren gene, the other parent Tervueren. Half of the puppies will be Tervueren and the other half will be Groenendael but will carry the recessive Tervueren gene.
Kk ayay	kk ayay	Kk ayay	Kk ayay	kk ayay	kk ayay	
						One parent is red Tervueren (which is dominant to grey) and the other is grey Tervueren (which is recessive to red). Each puppy will be red Tervueren but carry the recessive grey gene.

kk ayay	kk ayay	kk ayay	kk ayay	kk ayay	kk ayay	
						One parent red Tervueren but carrying the grey Tervueren gene and the other parent grey Tervueren. Half of the puppies will be grey Tervueren and the other half red Tervueren but will carry the grey gene.
kk ayay	kk ayay	kk ayay	kk ayay	kk ayay	kk ayay	
						One parent Groenendael but carrying the Tervueren gene and the other parent grey Tervueren. These combinations can be muddied. For example the Tervueren gene carried by the Groenendael may include both red and grey, therefore you may get a mixture of all or any of these puppies Unless you know for sure what is behind the Tervueren gene, you could get any of these combinations. The Grey appears recessive so therefore both parents must carry that gene to produce it.
						
						
kk ayay	kk ayay	kk ayay	kk ayay	kk ayay	kk ayay	

<table>
<tr><td colspan="2"> 
</td><td colspan="4"> 
</td><td>If both parents are recessive black, then all resulting puppies will beRecessive Black . It is hard to know if a Groenendael is recessive black unless this can be determined by relatives or offspring.</td></tr>
<tr><td>kk aa</td><td>kk aa</td><td>kk aa</td><td>kk aa</td><td>kk aa</td><td>kk aa</td><td></td></tr>
<tr><td colspan="2"> 
</td><td colspan="4"> 
</td><td>If one parent is a recessive black Groenendael and the other Tervueren, then all resulting puppies will be Tervueren, all carrying the recessive black gene.</td></tr>
<tr><td>kk aa</td><td>kk ayay</td><td>kk aya</td><td>kk aya</td><td>kk aya</td><td>kk aya</td><td></td></tr>
<tr><td colspan="2"> 
</td><td colspan="4"> 
</td><td>If one parent is a recessive black Groenendael and the other pure Groenendael, then all resulting puppies will be Groenendael, all carrying the recessive black gene.</td></tr>
<tr><td>kk aa</td><td>KK ayay</td><td>Kk aya</td><td>Kk aya</td><td>Kk aya</td><td>Kk aya</td><td></td></tr>
<tr><td colspan="2"> 
</td><td colspan="4"> 
</td><td>If both parents are Tervueren carrying the recessive black gene, then resulting puppies could be recessive Black Groenendael, Tervueren carrying the recessive Black gene or pure Tervueren.</td></tr>
<tr><td>kk aya</td><td>kk aya</td><td>kk aa</td><td>kk aya</td><td>kk aya</td><td>kk ayay</td><td></td></tr>
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<tr>
<td colspan="2"> 
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<td colspan="4"> 
</td>
<td>If both one parent is pure Tervueren and the other Tervueren carrying the recessive black gene, then half of the resulting puppies will be pure Tervueren and the other half Tervueren carrying the recessive black gene.</td>
</tr>
<tr>
<td>kk aya</td>
<td>kk ayay</td>
<td>kk aya</td>
<td>kk aya</td>
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