How to Read DNA Test Results

Now that DNA testing is more frequently available and used, it is important to understand what test results mean. So, here's a bit of background. Most traits are governed by genes, including hair colour, eye colour and inherited conditions. For each trait, a dog carries 2 copies of that gene, one from each parent and equally, each parent can only pass on a single gene (per trait) to its offspring. This is why most test results have 2 letters or symbols.

Different conditions can have different ways of reporting the results, some are given different letters or + - symbols so it's always important to check what those mean. It can vary from lab to lab as well. Personally, I prefer to use simple terminology; clear / carrier / affected.

If a dog is affected (sometimes called mutant) it means they have 2 copies of the gene so only have an affected gene to pass on. Similarly with a clear dogs, they only have clear (or normal) genes so can only ever pass on a single clear to their offspring .

With a carrier, they have one of each so will pass a clear gene to approx 50% of offspring and an affected gene to 50% which is why when dealing with a carrier, its important to know the status of the other parent.

If both parents are clear, when combined all of their joint offspring will be clear. And if both are affected, their joint offspring will be affected. But if parents have differing statuses, you will get mixed litters, and remember what each parent is capable of passing on when viewing this chart,

	Clear	Carrier	Affected
Clear	100% clear	50% clear 50% carrier	100% Carrier
Carrier	50% Clear 50% carrier	25% Clear 50% carrier 25% Affected	50% carrier 50% Affected
Affected	100% Carrier	50% carrier 50% Affected	100% Affected

As a breeder, it is important to understand what the results are and so what options are available when choosing a suitable mate.

As a buyer, it's equally important to understand the results and to do your own research into the conditions tested for to understand the impact of the results, irrespective of breed or even species. However, not all conditions have genetic tests available eg Hip Dysplasia so you should also ask for these results