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## **Battle crosses and hybrid vigour in game dogs.**

**Doug Link MSc** (This article is written for educational purposes only, and is a more unusual, less dry a way to discuss an often neglected topic in genetics it is also published on website [www.game-bred.com](http://www.game-bred.com) and [www.racing-dog.com](http://www.racing-dog.com)).

Heterosis or hybrid vigour is the opposite of inbreeding depression. Inbreeding depression often occurs naturally when out breeding animals or plants are inbred. This can be recognised by loss of overall fitness, lowering or loss of fertility and reduced competitiveness.

In the past there have been some very famous hybrid bull & terriers such as the famous badger field trials dogs Kilwilkie lad (Stafford male) \* (English bull terrier bitch), and the famous pit dog Stormer (English bull terrier bitch \* “pit bull terrier” dog). No doubt an important reason for the success of the former in badger trials and the latter in the pit was due to their hybrid vigour. Hybrid vigour leads to dogs that are nearly always stronger and more athletic than the parents (humans are no exception to this rule). It is often thought that crosses between different breeds such as an English bull terrier and a Staffordshire bull terrier is required for hybrid vigour. However dogs of the same breed but of very different bloodlines i.e. American pit bull terriers crossed with other American pit bull terriers; can also express varying degrees of hybrid vigour. In the shadowy world of dog fighting and cock fighting these dogs are known as battle crosses. A battle cross is a cross of different lines, or in extreme cases even different breeds for use in battle (here meaning the pit or badger trials). Hybrids are not themselves used to produce offspring, as hybrid vigour is greatly reduced in the offspring of hybrid dogs. Therefore a battle cross is the offspring of two successful highly inbred dogs but from very diverging lines or different breeds.

[Lurchers](#) are a good example of hybrid dogs. “[Lurcher](#)” is the name given for any dog crossed with a greyhound. [Lurchers](#) are generally used for the hunting of hares (although bull-lurchers are also used for the hunting of foxes and deer). A greyhound although fast is a very inbred animal, that is extremely suited to one thing only, (racing on a well conditioned race track.). This can result in very weak bones (very unsuitable for the bumpy surface or quick turning that would be required for hare coursing on an English field). For [Lurchers](#) that are hybrids (stronger and more hardy) this is not a problem; therefore the use of lurchers rather than greyhounds for hare coursing. Lurchers are the perfect example of hybrid working dogs.

But why don't hybrids always result in an improvement? The answer is simple; hybrid vigour only results in improvement of the offspring as compared to the parents. So don't expect to take two low performing parents and get offspring that are superior to the best game or working dogs already out there. (Note it is also important to keep in mind that out crossing even within a specific breed leads to far more genetic scatter and variation, resulting in a line that is not “tight”. This will result in a lot of “undesirable” garbage. Within that “garbage”

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however there will always be some rare diamonds, better even than the best of the best\*best crosses).

Hybrids (such as Stormer) are often criticised by “dog men” for not producing (and rightly so), this because it is only the hybrid itself that has the hybrid vigour. So if you have a successful hybrid the best option for producing, is to continue making crosses from the parents of the successful hybrid, but NOT the hybrid itself.



(Champion Stormer a “battle cross” on the left. An English bull terrier \* pit bull terrier cross. Most famous for defeating Ricky B’s champion Psycho. This contest was very famous at the time for the most [amount of money ever waged](#) on an English or Irish dogfight.

How can we tell if two lines have good genetic distances between them? If you have a lot of money then genetic testing is the answer. Different methods of DNA analysis can now score the level of genetic distance between two lines. Allowing you to make a cross within a breed and achieve hybrid vigour, however this method is expensive. The other way is to examine the pedigree of the two lines; trying to find as many differences as possible. Lines of dogs of the same breed but have been separated in different countries for a long period of time, will usually show a degree hybrid vigour.

#### **Main points to remember when exploiting hybrid vigour or heterosis.**

- Achieved by crossing unrelated inbred lines or breeds
- The more distantly related the lines, the greater the hybrid vigor in the crosses (beware as also the greater scatter).
- The greater degree of dominance at loci affecting a trait, the more hybrid vigor possible
- Traits exhibiting the most hybrid vigor are the lowly heritable traits (gameness?)

#### **Author’s bio.**

The author Doug Link has a post graduate degree in biotechnology from a UK university, worked as an agricultural breed and species improvement specialist. He also breeds both English bull terriers and Taiwan/Shammo roosters on a small scale. This article and its modified form have been published in “the game dog” magazine and “Earth Dog Running Dog” Magazine. He can be contacted indirectly through web site link above.