

Like all the rest of you, we have been bowled over by the extraordinary revelations that came from the deep dive into the equine mitochondrial DNA - and what it has exposed about horse breeding.

The remarkable Dr Emmaline Hill - the young Irish (genius) geneticist who knocked on the door of Jim Bolger, one of the wealthiest and most influential thoroughbred breeders and trainers in Ireland and asked him for a loan to back her research - has now managed to turn thoroughbred breeding on its head.

After 300 years of a tightly controlled Stud Book - and all the mythology that the thoroughbred breed was effectively descended from just a handful of Arabian horses - the real truth was finally revealed.

While there was certainly four or five Arabian horses, such as the Darley Arabian and the Godolphin Arabian who were all brought back to England from the Middle East , it turns out that overwhelmingly, the core base of the thoroughbred came from anything with four legs: Shetland ponies, carriage horses, farm horses, Draft horses.. you name it.

It seems that a couple of hundred years ago, all you needed to get into the Thoroughbred Stud book was to be the fastest horse at the races held down on the Village Green .

As I've mentioned in previous posts, Dr Hill has identified the real source of speed in the legendary Canadian sire Northern Dancer as being a Shetland pony mare who raced in an English village in the 16th century.

While the physical 'type' of the Shetland pony has disappeared over the long, 300-year history of the thoroughbred breed - that particular speed gene has been passed through intact into the Northern Dancer breed.

Dr Hill has also revealed some concerning research that shows the original thoroughbred - which she calls the TT type, the true tough stayer with all the expected characteristics of the thoroughbred - is now effectively being bred out of fashion.

While the second category is the TC Horse - that's the middle-distance horse - what the world really wants today it seems is the CC horse which is all about early speed and the early running two-year-old and three-year-olds.

The thing about the mitochondrial DNA is that it is absolutely 100% accurate - it is tracing the exact footprints of the mothers mother's mother's mother's DNA - and so on.

Further recent research by other geneticists into the mitochondrial DNA has traced the journey of pony blood into the American horse - and in particular, the American cutting horse.

Once Dr Hill established the code - how to scientifically 'track down the tigers' if you like - then she opened the field right up for other geneticists to track the mitochondrial path in numerous other breeds and species.

It appears that Smart Little Lena - the major sire influence of the last 30 years - actually originated from a line of Welsh mountain ponies on his female side. He was extremely small - some say only around 13.2 hands high - with the typical cute dish face, bug eyes and quirky ways of the Welsh mountain pony.

Added to this are the revelations around the 'pink' or or strawberry roan gene and the 'blue roan' gene. These pretty and unusual colours have rapidly risen to prominence in such champion horses as Royal Blue Boon and her various descendants as well as the popular 'pink roan' horses by horses such as Peptoboonsmal and Metallic Cat.

These breeds of horses also have a particular physical type that - when compared to the Welsh mountain pony and the Connemara - appear to be incredibly similar.

The geneticists tell us that the pony gene is completely separate to the thoroughbred gene pool from which most quarter horses and Australian stock horses were originally descended. Because the pony gene pool is so far removed as a complete 'outlier', it is therefore going to be overwhelmingly dominant across the existing AQHA and ASHS gene pools. In other words, if you think of the dominance that the Bos Indicus (Brahman) had over Bos Taurus (British breeds) then you will start to understand how it all works.

The revelation that so much Welsh and Connemara pony blood is now carried so closely in these 'pink' and 'blue' genes probably explains their smaller physical type - shorter legs, prettier heads and less speed - when compared to other horses that are descended from thoroughbreds.

Dr Emmaline Hill has been able to establish a 'speed gene' and she has been able to trace it using genetic markers. The speed gene is only carried in the thoroughbred. No other breed of horse carries it in the world. In fact her search for the 'speed gene' was the 'hook' that convinced Irish breeder and trainer Jim Bolger to put the funding up to make her research possible.

In any case, seeing really is believing - and the comparison of photographs between famous horses and ponies (see below) is enlightening - to say the least.

While the Australian Stock Horse was mostly based on colonial thoroughbred bloodlines - along with a dash of brumby, Arab, Percheron, you name it - there was apparently also a good dash of pony in several 'breeds' such as Cecil Bruce and Paleroo Peter the sire of Rivoli Ray.

So where did the pony actually come from? Well, it's probably a no-brainer. Australian graziers and farmers all had children - no different to American ranchers and farmers. They were kids ponies that eventually had a foal 'by that stallion down the road' and when they

rode the progeny they discovered it was hardy, sure-footed and clever - and usually extremely small.

While the breed was around in some fragmented form since early American settlement, the American AQHA was only established as a formal organisation in 1940.

This is relatively recent compared to the Thoroughbred Stud book which was established in England over 300 years ago. That means that while ponies might have been in the 'faraway fragments' of the breed for a very long time, those dominant Welsh or Connemara strains that found their way into horses such as Smart Little Lena, Royal Blue Boon and Metallic Cat have only been in genetic 'play' for a comparatively brief time - 84 years as compared to the 300 plus if the thoroughbreds. That means all their primary physical characteristics remain strongly in place to this day - for instance, their smaller size, their colour, distinctive heads, legs etc.

These pony characteristics may have been enhanced by the concentrated level of inbreeding that has been practised in recent years which has 'enhanced' these characteristics by constant repetition. In other words, it appears to have stabilised a 'type'.

It may also suggest that their superior performance characteristics (cutting ability) might be linked into their (similar) physical characteristics so the phenotype (what they actually look like) managed to 'hitch a ride'.

So what can we learn from the revelations of the mitochondrial DNA that has so dramatically 'pulled back the genetic curtains' and brought forth all of these interesting family secrets?

That the pony will always - ALWAYS - easily dominate any gene pool that has been based on thoroughbred blood.

So saddle up folks, for all those pretty pink and blue coat colours - along with their shorter legs, cuter heads and much more limited speed - because the pony always rules - and that's that.

They may only be small - but they sure can pack a punch.