

A FORMULA ONE BREEDING PATTERN

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The legendary breeder B. F. Phillips, Jr., once explained to me that all we are doing as horse breeders is recycling the genes that are available.

Phillips, who bred such great runners as Dash For Cash, professed that he would try different breeding patterns and if it worked, he would continue it. If it didn't, he wouldn't continue with it.

But the key was he had a set of genes to work with, and he was going to use them to build the next generation. He was going to recycle them into the next generation—hopefully breeding a better horse.

This may be a simple way to look at modern horse breeding, but it certainly applies to the breeding practice of inbreeding and linebreeding. When we inbreed and linebreed to produce horses, we are trying to recycle the genes of the common ancestor into the individual being produced.

One of the more interesting inbreeding/linebreeding patterns I have seen in the horse industry has to do with the tail female line. The tail female line is that bottom line on a bracket pedigree that continues to the taproot mare. The taproot mare is the foundation mare in this line of horses. Before we go on, let's verify the significance of the tail female line and some of the genetic aspects of this part of the pedigree.

On the genetic side of the situation we have found that the tail female line has an interesting role, as this is where we inherit our genetic information for the mitochondria in our body. The mitochondria are the part of our cells that are used to produce the energy our body needs to function on the cellular level. The mitochondria are found outside the nucleus in each cell.

The mitochondrial DNA (mtDNA) is the source of genetic information that runs the workings of the mitochondria. We all inherit our mtDNA from our mothers. Thus the mtDNA the ani-

mal inherits comes through the tail female line. The mtDNA the individual inherits from the sire is not used in the next generation. It is lost or overshadowed by the mare's mtDNA. This phenomenon gives the individual a unique tie to its mother and the tail female line.

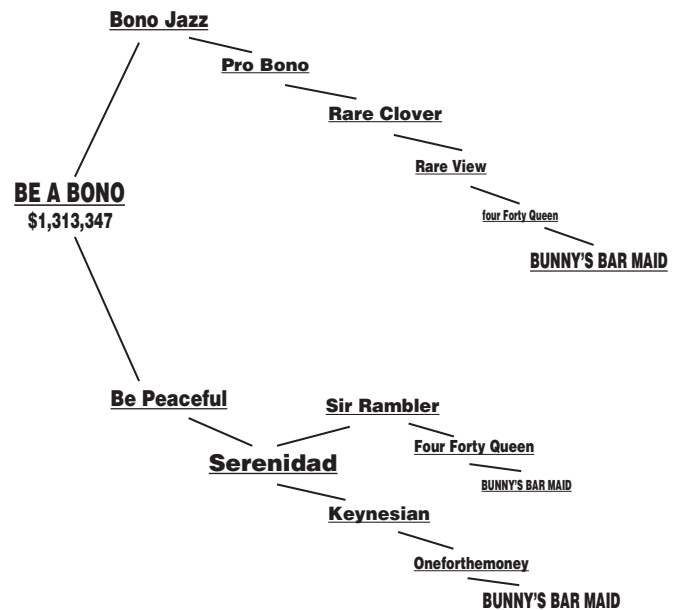
Some of the ongoing research areas currently being looked at have to do with the influence the mtDNA and the mitochondria has on speed and/or stamina in the racehorse.

One of these research projects was a six-year study by Dr. Stephen Harrison of Thoroughbred Genetics, Ltd., in Kent, England and Juan Luis Turrion-Gomez of the University of Salamanca, Spain. They reviewed DNA samples from 1,000 Thoroughbreds that raced as three-year-olds in the United Kingdom. That included classic race winners. Their preliminary results indicated that they found "specific gene variants" that indicated better performance at certain distances by horses that descended from certain mares and their mtDNA.

The role of the tail female line in the breeding of horses is a well-documented fact. This is obvious with the Bruce Lowe Figure System. Bruce Lowe was an Australian that became obsessed with the mare in the production of a racehorse through the tail female line. He set out to determine the best mare lines by counting the number of times a mare was the tail female line descendant of a winner of the English Derby, English Oaks and St Leger. Thus he traced the tail female line to a definite taproot mare.

The mare with the most descendants was given the number 1 in his system. She was the Tragonwell's Natural Barb Mare. This led to the formation of 50 families and some of these families became noted for certain characteristics. Some of the families were noted as sire producing families and some were noted as running families. The running families were 1 through 5 and the sire families were numbers 3, 8, 11, 12 and 13. Thus if a horse comes from the #1 family in Bruce Lowe's Figure System, it would have the same mtDNA as Tragonwell's Natural Barb Mare.

This is the same Formula One Breeding Pattern found in Mahubah's pedigree. Mahubah was the dam of Man O'War.



The focus on the tail female line by thoroughbred breeders takes us to a little known breeding pattern called the Formula One Pattern. This breeding pattern comes together when the sire of an individual and the dam of an individual come from the same tail female line thus tracing to a common “matron” or taproot mare.

The pedigree of Man O’War provides us with an example of this breeding pattern. Mizpah was the third dam of Man O’War. She was sired by Macgregor, a stallion that came from the #4 Family in the Bruce Lowe Figure System. The dam of Mizpah was the Underhand Mare. She was a product of the #4 Family. Thus Mizpah’s sire and dam came from the same Bruce Lowe female family.

Mahubah was the dam of Man O’War. This mare was sired by Rock Sand. Rock Sand was from the #4 Family in his tail female line. Thus the sire and the dam of Mahubah traced in the tail female line to the same Taproot Mare. Her name was the Layton Barb Mare.

My first exposure to the Formula One Breeding Pattern came in an article in THOROUGHBRED TIMES August 7, 2004. The article was titled “Riddle Me This.” The article was about the breeding career of Man O’War. This is the article that profiled Mahubah’s Formula One Breeding Pattern.

At the beginning of 2005, the American Quarter Horse Association named the previous year’s Running Champions and the World Champion Racing Quarter Horse for 2004 was Be A Bono, owned and bred by Spencer L. Childers.

An AQHA Hall of Fame member, Childers became a mainstay in the quarter running industry with the mother/daughter combination of Black Easter Bunny and Bunny’s Bar Maid . . . Champions and tail female descendants of Flicka.

Flicka is the taproot mare of a long line of Champions and runners on the racetrack. Some of the outstanding runners from this great mare include Black Easter Bunny (AQHA Racing Champion Three Year Old Filly); Bunny’s Bar Maid, (AQHA Racing Champion Two Year Old Filly); Jet View (AQHA Racing Champion Two Year Old Colt); Power Train, (AQHA Racing Champion Two Year Old Colt); Royal Quick Dash, (AQHA Racing Champion Two Year Old Colt); First Sovereign (AQHA Racing Champion Two Year Old); Come Six (AQHA Racing

Champion Aged Gelding); Black Sable, (AQHA Racing Champion Three Year Old Filly) and Be A Bono (AQHA Racing World Champion Quarter Horse). All of these Champions trace in the tail female line to Flicka.

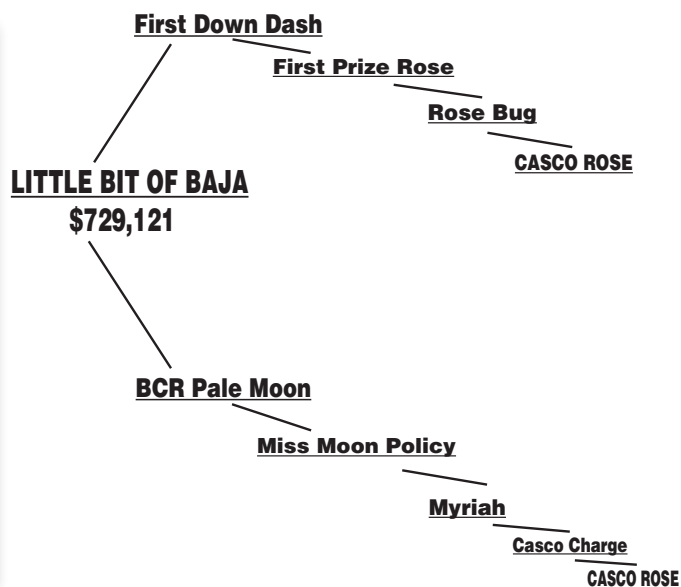
Be A Bono is the latest racing champion from this line. He was the 2004 AQHA World Champion Racing Quarter Horse, 2004 AQHA Racing Champion Three-Year-Old and the 2004 AQHA Racing Champion Three-Year-Old Gelding. This good runner earned \$1,313,348 with 14 wins, 4 seconds and 1 third in 26 starts.

Be A Bono is sired by Bono Jazz. The tail female line of Bono Jazz traces back to the great mare Bunny’s Bar Maid and her dam Black Easter Bunny. Black Easter Bunny was a daughter of Flicka. Bono Jazz was out of Pro Bono, who was out of Rare Clover, who was out of Rare View, who was out of Four Forty Queen, a daughter of Bunny’s Bar Maid.

Be Peaceful is the dam of Be A Bono. This mare traces in her tail female line to Bunny’s Bar Maid. Bunny’s Bar Maid is the fifth dam of Be A Bono taking us back to Flicka through Black Easter Bunny. Be Peacefull was out of Serenidad, who was out of Keynesian, who was out of Oneforthemoney, who was out of Bunny’s Bar Maid.

This pedigree doesn’t stop with this basic pattern. It adds another ingredient. The second dam of Be A Bono is Serenidad. This mare is sired by Sir Rambler. Sir Rambler is out of Four Forty Queen, who is a daughter of Bunny’s Bar Maid. Thus Serenidad is double-bred to Bunny’s Bar Maid through the Flicka tail female line of her sire and dam. The pedigree of Be A Bono is a duplicate of the Formula One Breeding Pattern found in Mahubah, the dam of Man O’War.

The success of Be A Bono is reinforced by two sons of Bono Jazz with a similar breeding pattern. They are Diller A Dollar, winner of the 2005 Golden State Derby G1 and Ten Oclock Scholar, winner of the 2008 Los Alamitos Invitational Championship G1. Bono Jazz traces to Flicka in the tail female line. The dam of these full brothers is Dollars Chick, a tail female descendant of Flicka. Dollars Chick is out of Champs Dollar, a daughter of Strong Dollar, who is out of Oneforthemoney. Oneforthemoney is out of Bunny’s Bar Maid.



The naming of the 2007 AQHA Racing Champions brought me back to the Formula One Breeding Pattern.

Little Bit Of Baja is the 2007 AQHA Racing Champion Three-Year-Old Gelding. He won the 2007 Los Alamitos Super Derby G1 and was second to World Racing Champion Blues Girl Too in the Champion of Champions G1. He came back in 2008 with a win in the Go Man Go Handicap G1 and earning another second in the Champion of Champions. He set a new track record at Los Alamitos going 400 yards in :19.271.

Little Bit Of Baja is a son of First Down Dash. The tail female line of First Down Dash traces to Casco Rose. First Prize Rose is the dam of First Down Dash. Her dam is Rose Bug, who is out of Casco Rose.

On the other side of the pedigree, the tail female line of Little Bit Of Baja traces to Casco Rose through his dam BCR Pale Moon. BCR Pale Moon is out of Miss Moon Policy, who is out of Myriah. Myriah is a three-quarter sister to Rose Bug, the second dam of First Down Dash.

The success of Little Bit Of Baja and Be A Bono prompted me to look for other Champions with this breeding pattern. I found Hardly Hateful the 2004 AQHA Racing Champion Two-Year-Old Filly. She was second in the 2004 Los Alamitos Million Futurity G1 and the 2004 Rainbow Futurity G1. She won \$436,979 finishing first, second or third in seven of her eight starts.

The sire of Hardly Hateful is Fishers Dash by First Down Dash and he is out of Fishers Favorite. Fishers Favorite is sired by Beduino (TB) and out of Ought To Go, a tail female descendant of Do Good. Do Good is the taproot mare in the tail female line of Fishers Dash. Do Good was one of the foundation mares for the Vessels Stallion Farm.

The dam of Hardly Hateful is Hateful Hanna. Hateful Hanna is out of Class With Cash, a three-quarter sister to Fishers Dash. The dam of Class With Cash is Fishers Favorite, the dam of Fishers Dash. Fishers Favorite is out of Ought To Go, who is out of Do Good Bam, who is out of Do Good. Thus Hardly Hateful is a tail female descendant of Do Good through her dam as well as her sire.

This gives us three champions since 2004 with the Formula One Breeding Pattern. A pattern that is very rare and not seen very much. But we can also find a hybrid of this breeding pattern in two more champions in this time period. They are Blues Girl Too and Foose.

Blues Girl Too was the 2006 AQHA Racing Champion Two Year Old and the 2006 AQHA Racing Champion Two Year Old Filly. She added the AQHA Racing World Championship; the AQHA Racing Champion Three-Year-Old and the AQHA Racing Champion Three-Year-Old Filly titles in 2007. She won such races as the 2006 Los Alamitos Two Million Futurity G1 and the 2007 Champion of Champions G1.

Blues Girl Too is sired by Corona Cartel, a son of Holland Ease. Holland Ease is a son of First Down Dash. First Down Dash is the key individual in the sire line of Blues Girl Too and our look at the tail female line of Blues Girl Too. The tail female line of First Down Dash traces to Casco Rose through his dam First Prize Rose. First Prize Rose is out of Rose Bug, who is out of Casco Rose.

The dam of Blues Girl Too is Run The Dash. Run The Dash is out of Dashin Rosie, a three-quarter sister to First Down Dash. Dashin Rosie is out of Rose Bug, who is out of Casco Rose. Thus we see a link between the tail female line of a prominent stallion in the sire line to the tail female line of the individual.

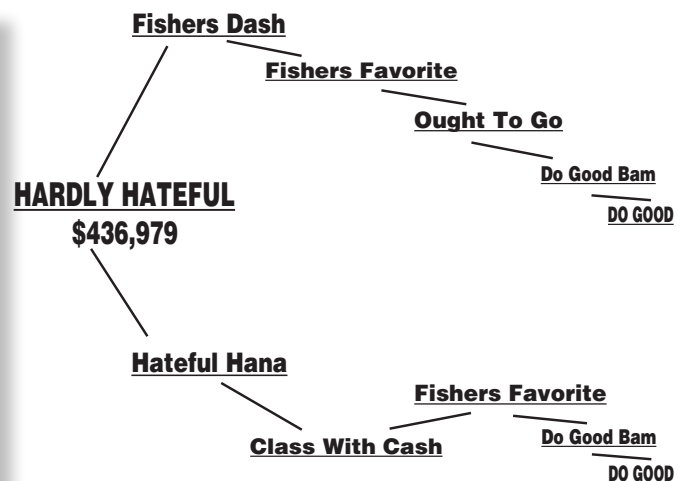
This breeding pattern is reinforced with a stakes winner sired by Fishers Dash. This gelding's name is Pivotal Decision. He won \$630,043. His wins include the Dash For Cash Futurity G1 and the Dash For Cash Derby G1.

First Down Dash sired Fishers Dash and that brings in the Casco Rose tail female line into the sire line of Pivotal Decision. The dam of Pivotal Decision was Bug In The Pie. This mare was out of Bug Charge, who was out of Casco Charge, who was out of Casco Rose. Pivotal Decision and Hardly Hateful are two of the top five money winners sired by Fishers Dash and both carry a form of the Formula One Breeding Pattern.

Foose was the 2008 AQHA Racing Champion Two-Year-Old Colt. This colt won the 2008 Ed Burke Million Futurity G1 and was second in the Golden State Million Futurity G1. He earned \$1,037,728 in 2008.

Foose is sired by Stel Corona. Stel Corona is a son of Corona Cartel, who is a son of Holland Ease. Holland Ease is our key sire line individual in this pedigree. He is out of Easy Henryetta. This mare is out of Babys Henryetta, a daughter of the Thoroughbred mare Baby Steel. Thus the tail female line of Holland Ease traces to Baby Steel, our taproot mare in this pedigree.

The dam of Foose is Summertime Quickie. This mare is out of Summertime High, who is out of Summertime Encounter, who



is out of Easy's Baby Jet, a daughter of the taproot mare Baby Steel. Actually, Easy Henryetta and Easy's Baby Jet are three-quarter sisters sired by Easy Jet.

The success of these runners shows that in every case they are inbred and linebred to three-quarters brothers and sisters. This is inbreeding and linebreeding to collateral relatives. Collateral relatives are full brothers and/or sisters as well as three-quarter brothers and/or sisters that appear together in the pedigree. This breeding pattern has proven successful in a number of great racehorses and the Triple Crown winner Seattle Slew serves as a prime example. His pedigree includes the great *Nasrullah and *Royal Charger, who are three-quarter brothers.

The interesting part of all this has to do with the fact that by breeding to these collateral relatives and using one of those relatives in the tail female line, we are reintroducing the influence of a significant and successful taproot mare and her mtDNA. This provides the pedigree with genetic consistency as the mare always passes her mtDNA on to the next generation.

There are many factors that go into the making of a great racehorse and these five Champions certainly verify that fact with strong pedigrees from top to bottom. So we can't rely on the tail female line as the only way to produce a Champion runner. We all know that it's not that simple or they would all be equal as runners.

But at the same time there is something special about the bottom line of the pedigree and the production of speed and/or stamina in the racehorse.

So with this in mind it just seems to fit that Mr. Phillips' thoughts on recycling were very prophetic. Now all we need to do is identify the "genetic variants" in the mtDNA that will give us a genetic tool to work with in the production of good racehorses.

