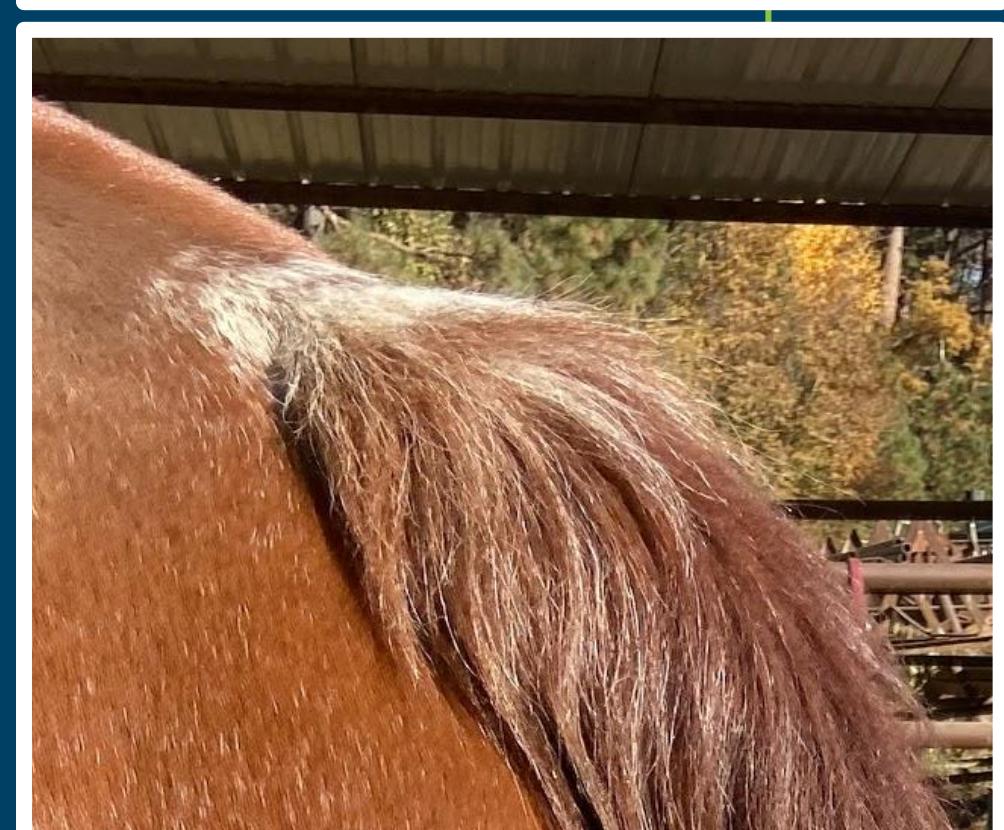


PLAYING WITH OAKIE'S COAT COLOR GENES



| | p^2 | $2pq$ | q^2 |
|-----------|-------|-------|-------|
| Predicted | 0.83 | 0.16 | 0.01 |
| Actual | 0.90 | 0.10 | 0.00 |

If $p = 0.91$ and $q = 0.09$, we predict...

The trend of 2020 alleles do not appear to be in H-W equilibrium because the allele "e" had a dramatic increase and "f" has a dramatic decrease (Table 1). The allele "lp" was 0 because we didn't chart those genetics (Table 1).. The horses' C/Ccr actual and predicted do not match as well, so that strongly suggests that the horses do not fit the H-W equilibrium (Table 3).

Table 1

| Genotype | w | g | e | a | cr | d | to | o | f | p | rn | rb | lp |
|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2015 Allele q | 1.00 | 0.85 | 0.67 | 0.75 | 0.05 | 0.91 | 1.00 | 1.00 | 0.67 | 1.00 | 0.91 | 1.00 | 1.00 |
| 2018 Allele q | 1.00 | 0.97 | 0.63 | 0.41 | 0.00 | 0.95 | 0.93 | 0.98 | 0.37 | 0.68 | 0.88 | 0.95 | 1.00 |
| 2019 Allele q | 1.00 | 0.89 | 0.65 | 0.00 | 0.00 | 0.96 | 0.94 | 1.00 | 0.96 | 0.83 | 0.98 | 0.98 | 1.00 |
| 2020 Allele q | 1.00 | 0.81 | 0.92 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.39 | 0.55 | 0.95 | 0.97 | 0.00 |

A horse with incomplete dominance is showing the CC^{cr} gene because of the blending of traits. When CC^{cr} is showing the red pigment is diluted to yellow and black pigment is unaffected. But with $C^{cr}C^{cr}$ both red and black pigments are diluted to pale cream. Skin and eye color are also diluted.



The gene TO is mendelian meaning it follows the rules of "dominant" and "recessive" genes. So if TOTO is the individual's genotype the horse is characterized by white spotting pattern known as tobiano. TOto is same as TOTO and the genotype toto has no tobiano pattern present.



The gene "W" is considered pleiotropic because the gene can control other phenotypic effects that occur with the "WW" genotype. When a horse is "WW" the horse is all white with no pigment in the skin and a seemingly irrelevant trait that comes along with "WW" is the horse's digestive system is not properly developed meaning it can live a few days at most.



If horse has black hair or the allele "E" then that black hair is in points pattern. A has no effect on red (ee) pigment. This meaning the Gene "A" is an example of Epistasis. The "A" Gene is changed by the presence of the "E" allele. This will suppress the "A" allele meaning it does not affect "ee".



Table 2

Population size is large

There is no migration

No mutations

No Natural Selection

Random Mating

Not met population <30

Not met equine and rodeo horses to not constantly live in Quincy from survey

Met: Data strongly supports no Mutations found

Met: No supposed Natural selection

Not met horses are specifically breed

By:
Chloe Lambert, Morgan Avrit, Hailey Myers