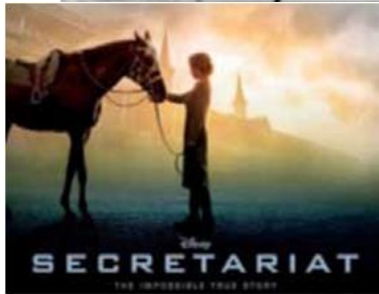


Selective Breeding – Secretariat: The Horse with Heart

Ever since the first rider challenged another rider to see who had the faster horse, horse- men have described the fastest runners as having “great heart.” The term originally was meant to describe a personality characteristic– something real, but immeasurable, the ability that made a horse dig deep and find the courage not to give up until he crossed the finish line victoriously.



Today, thanks to the truly great heart uncovered at the autopsy of the amazing Thoroughbred Secretariat, it is known that great heart really is a physical description of an extraordinary heart found in certain Thoroughbreds, Quarter Horses and Standardbreds that has passed down the female line on the X chromosome from the legendary Eclipse, foaled in England in 1764.



Following the tradition of burying just the head, heart and hooves of great racehorses, Eclipse was cut open by a London surgeon after his death in 1789. The heart found inside of Eclipse was so much larger than other horses that it was weighed. Eclipse’s great heart weighed 14 pounds, more than twice the normal weight of hearts of horses of that era – approximately six pounds.

Today, the normal weight of a horse’s heart is 8.5 pounds. Secretariat’s heart was estimated to be **22 pounds** after finding the second-largest heart in Sham (Secretariat’s Triple Crown rival) and weighing it at 18 pounds.

1) In the pedigree below, write the genotype for each individual on the line beneath each symbol.

Use the following information to help you with the genotypes:

Individuals that possess the trait must have the allele on their X chromosome (X^m).

Individuals that do not possess the heart trait would not have the allele on their X chromosome (X^0).

2) Shade in carriers appropriately. Label the generations to the right of the pedigree.

