

Exploring Genetic Traits: Let's Hatch a Dragon

In this activity you will be exploring how different combinations of genes result in different physical appearances by "breeding" and "hatching" a paper dragon.

Below is a key to the traits of paper dragons

Dragon Key	
Upper case letters represent dominant alleles; lower case letters represent recessive alleles	
N = LONG NECK n = short neck	E = Red Eye e = white eye
H = HORN PRESENT h = horn absent	F = FIRE BREATHING f = not fire breathing
G = GREEN BODY g = gray body	L = LONG TAIL l = short tail
S = SPIKES ON END OF TAIL s = no spikes on end of tail	R = RED WINGS r = yellow wings
T = THREE TOES t = four toes	W = YELLOW BELLY w = white belly
B = BLACK TAIL SPIKES b = red tail spikes	K = FRECKLES k = no freckles
X = X chromosome / no ear frills (XX = female)	Y = Y chromosome / ear frills present (XY = male)

1. What letters are used to represent wing color? _____
2. The letter "Y" is used as a symbol to represent _____
3. What is the dominant belly color?

4. What is the recessive body color?

Using the key as a reference fill in the missing symbol for alleles (genotypes) or descriptions of physical appearances (phenotypes) in the table below. The first two are done for you. Remember dominant traits appear when either one or two copies of the dominant allele are present. For example "NN" and "Nn" both cause the dragon's neck to be long. Only in the case of "nn" would the dragon's neck be short because no dominant allele for a long neck is present.

Trait	Genotype	Phenotype
Neck Size	NN or Nn	Long neck
Neck Size	nn	Short neck
Spikes on tail		No Spikes
Eye Color	EE	
Horn	Hh	
Fire breathing	_____ or _____	Breathes Fire
Belly Color	WW or Ww	
Color of spikes		Red
Tail Length	_____ or _____	Long

Create your own Dragon

- Roll a 6 sided die to determine the genotype and phenotype of your dragon.
- If you roll a 1, 3, or 5 your dragon is Heterozygous (hybrid) for the trait
- If you roll a 2 or 4 your dragon is homozygous (pure) dominant
- If you roll a 6 your dragon is homozygous (pure) recessive
- For the Male trait you must roll a 1, 2 or 3
For the female trait you must roll 4, 5 or 6

Trait	Genotype	Phenotype
Neck		
Horn		
Body Color		
Spikes		
Number of Toes		
Tail Spike Color		
Eye Color		
Fire		
Tail Length		
Wing Color		
Belly Color		
Freckles		
Male (ear frills) or Female (no ear frills)		

For what traits is your dragon Homozygous Dominant?

For what traits is your dragon Heterozygous?

For what traits is your dragon homozygous recessive?

Cut out the pieces for the traits relevant for your dragon. Color and paste these pieces onto a separate sheet of paper. Lastly, give your dragon a name 😊

DRAGON BLACKLINE MASTER

