

Names _____ Date _____ Period _____

Domestic turkeys have been selectively bred to present traits like white feathers, large size, and high feed efficiency. These traits are all influential factors that farmers must consider to make their flock marketable and ultimately, profitable.

Today, you and your group will create your own turkey flock! You will monitor nine real traits, determine the genotype of both parents, and then find the offspring's genotype. For each trait listed, you will first determine if each parent possesses a dominant or recessive allele. Generally, the dominant allele will be a capital letter, and the recessive allele will be the same letter in lower-case.

Starting with the hen's traits, you will flip a coin for each allele variation. If the coin lands on *heads*, you will circle the *dominant* allele. If the coin lands on *tails*, you will circle the *recessive* allele. Repeat for all nine traits and allele variations for the hen and the tom.

After determining the traits of each parent, copy those alleles to the offspring on the next page. This combination of alleles, one from each parent, determines the genetic and physical characteristics of the offspring. When all parental traits are copied to the offspring, circle the correct combination of alleles to see what characteristics the offspring will display, also known as its phenotype.

Hen's Traits

Trait	Dominant Allele (Heads)	Recessive Allele (Tails)
1. Male or Female	X= Female	X
2. Feather Color	W= white	w= Brown
3. Leg Length	L= long	l = short
4. Egg Production	E= Less eggs, high hatchability rate	e = More eggs, low hatchability rate
5. Stature	S = Heavy Breasted	s= Upright stature
6. Meat to Bone Ratio	M= Ideal Meat to bone ratio	m= High Fat Content
7. Behavior	D= Docile	d= Aggressive
8. Feed Efficiency	F = High Feed Efficiency	f = Low Feed Efficiency
9. Rate-of-Gain	R = High Rate of Gain	r = Low rate of gain

Fathers Traits

Trait	Dominant Allele (Heads)	Recessive Allele (Tails)
1. Male or Female	X	Y= Male
2. Feather Color	W= white	w= Brown
3. Leg Length	L= long	l = short
4. Egg Production	E= Less eggs, high hatchability rate	e = More eggs, low hatchability rate
5. Stature	S = Heavy Breasted	s= Upright stature
6. Meat to Bone Ratio	M= Ideal Meat to bone ratio	m= High Fat Content
7. Behavior	D= Docile	d= Aggressive
8. Feed Efficiency	F = High Feed Efficiency	f = Low Feed Efficiency
9. Rate-of-Gain	R = High Rate of Gain	r = Low rate of gain

Offspring Traits

Selected Trait	Mother's Allele	Father's Allele	Circle appropriate trait combination		
SAMPLE TRAIT	B	b	BB	Bb	bb
1. Male or Female			XY	XX	
2. Feather Color			WW	Ww	ww
3. Leg Length			LL	Ll	ll
4. Egg Production			EE	Ee	ee
5. Stature			SS	Ss	ss
6. Meat to Bone Ratio			MM	Mm	mm
7. Behavior			DD	Dd	dd
8. Feed Efficiency			FF	Ff	ff
9. Rate of Gain			RR	Rr	rr

- a. Will heterozygous genotypes result in a dominant or recessive trait? Why?

- b. Will homozygous genotypes being passed down from parent to offspring result in a dominant or recessive trait? Why?

- c. If a recessive gene were advantageous, how would a farmer ensure his flock presented that trait?

- d. What is the difference between a genotype and phenotype?