

Bos Taurus Base Color Genetics

To be used with Bos Taurus Base Color Genetics Power Point

1. Three alleles make the base color genetics more complex list all possible phenotypes under their genotypes. Possible Allele Combinations: $E_D E_D$, $E^+ E^+$, ee , $E_D E^+$, $E_D e$, $E^+ e$

Black

Wild Type Brown or Gray

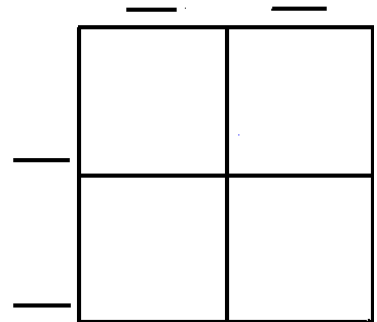
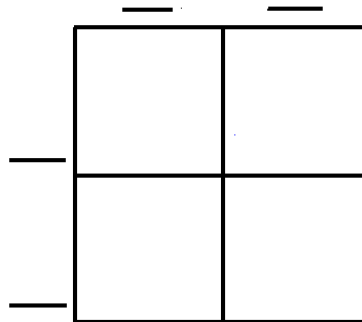
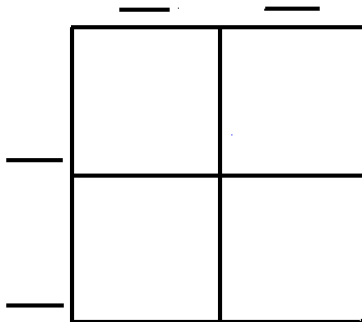
Red

2. Fill out the Punnett Squares for all possible homozygous color crosses.

$E_D E_D \times E^+ E^+$

$E^+ E^+ \times ee$

$E_D E_D \times ee$



Genotypes : _____

Phenotypes: _____

Genotypes : _____

Phenotypes: _____

3. Fill out the Punnett Squares for two allele homozygous / heterozygous color crosses.

$E_D E_D \times E_D e$

	—	—
—		
—		

Genotypes : _____% _____
 _____% _____
 _____% _____

Phenotypes: _____% Black
 _____% Wild Type
 _____% Red

$E^+ E^+ \times E^+ e$

	—	—
—		
—		

Genotypes : _____% _____
 _____% _____
 _____% _____

Phenotypes: _____% Black
 _____% Wild Type
 _____% Red

4. Fill out the Punnett squares for two allele same genotype heterozygous color crosses.

$E_D e \times E_D e$

	—	—
—		
—		

Genotypes : _____% _____
 _____% _____
 _____% _____

Phenotypes: _____% Black
 _____% Wild Type
 _____% Red

$E_D E^+ \times E_D E^+$

	—	—
—		
—		

Genotypes : _____% _____
 _____% _____
 _____% _____

Phenotypes: _____% Black
 _____% Wild Type
 _____% Red

5. Which statement is true about the cow and calf shown on slide 18.
- A. The cow and calf are both homozygous.
 - B. The calf inherited her color genes from her sire.
 - C. The cow is heterozygous and the calf inherited her recessive gene for her base color.
 - D. This cow cannot be this calf's dam.

6. Now try crosses with three alleles in a homozygous / heterozygous cross.

$$E_D E_D \times E^+ e$$

$$E_D E^+ \times e e$$

$$E_D e \times E^+ E^+$$

	—	—
	E _D	E _D
—		E ⁺
—		e

	—	—
	E _D	E ⁺
—		e
—		e

	—	—
	E _D	e
—		E ⁺
—		E ⁺

Genotypes : _____% _____
 _____% _____
 _____% _____

Genotypes : _____% _____
 _____% _____
 _____% _____

Genotypes : _____% _____
 _____% _____
 _____% _____

Phenotypes: _____% Black
 _____% Wild Type
 _____% Red

Phenotypes: _____% Black
 _____% Wild Type
 _____% Red

Phenotypes: _____% Black
 _____% Wild Type
 _____% Red

7. Now try crosses with three alleles with a heterozygous / heterozygous cross.

$E_D E^+ \times E^+ e$

Genotypes : _____% _____
 _____% _____
 _____% _____

Phenotypes: _____% Black
 _____% Wild Type
 _____% Red

$E_D e \times E^+ e$

Genotypes : _____% _____
 _____% _____
 _____% _____

Phenotypes: _____% Black
 _____% Wild Type
 _____% Red

$E_D E^+ \times E_D e$

Genotypes : _____% _____
 _____% _____
 _____% _____

Phenotypes: _____% Black
 _____% Wild Type
 _____% Red