

Name: Key Period: _____ Date: _____

Frimpanzees & Genetics

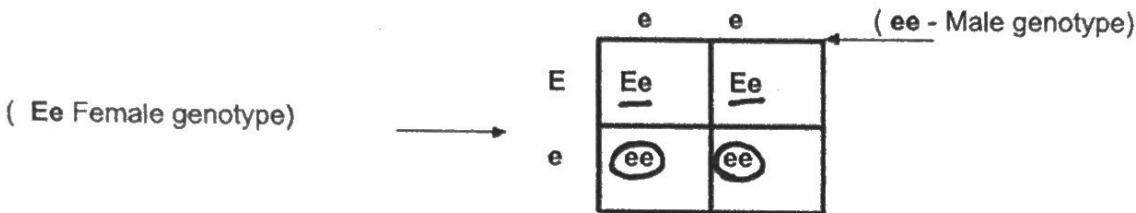
We've now spent a lot of time learning about chromosome movement and meiosis, but what does this have to do with frimpanzees and how they look? Let's look at just one aspect of frimpanzees looks - skin. Frimpanzees have either blue (EE or Ee) or yellow skin (ee) and it can either have no spots (BB or Bb) have spots (bb). The gene for spots is on the big chromosome and the gene for skin color is on the small chromosome.

Given the following new vocabulary words and definitions answer the questions below.

Term	Definition	Question
Allele	Represented by ONE letter. One allele comes from mom and one allele comes from dad and together they determine a trait.	What is the allele for blue skin? E What is the allele for spots? b
Genotype	pair of alleles (letters) that show the genetic makeup of an individual.	What is the genotype of a yellow frimpanzee? ee
Phenotype	how the trait is seen in the individual.	If your frimpanzee had the letters Ee, what color skin does the frimpanzee have? blue
Dominant allele	this trait is seen even if paired with a small letter.	What is the dominant allele for skin spots/no spots? B What is the dominant allele for skin color? E Dominant alleles are always represented by capital letters.
Recessive allele	a recessive trait is only shown when two recessive alleles pair together.	What is the recessive allele for spots/no spots? b What is the recessive allele for skin color? e Recessive alleles are always represented by lower case letters.
Homozygous	the pair of alleles are exactly the same.	How would you write a <u>homozygous dominant</u> genotype for skin color? EE How would you write a <u>homozygous recessive</u> genotype for skin color? ee
Heterozygous	the pair of alleles are different.	How would you write a <u>heterozygous</u> genotype for skin color? Ee

Punnett squares – a tool used to determine the probability of having a child with a certain trait when you know the parent's genotypes.

Example: Let's say dad has yellow skin (ee) and mom has blue skin (Ee). Let's set up a Punnett square to show a cross between these two parents. Since parents can't give both traits to their children you need to separate the letter so only one of each letter goes above a box.

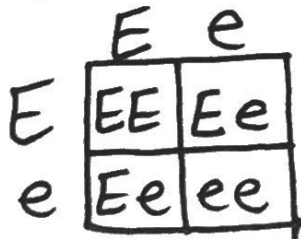


What percent chance do these parents have of getting a child with blue skin? 2/4 50%

What percent chance do these parents have of getting a child with yellow skin? 2/4 50%

Now let's do this with your frimpanzees:

- The genotype of your dad frimpanzee was Ee and the genotype for mom was also Ee.
- Does each parent give all or half of its chromosomes to the baby? half
- Draw the Punnett square below to show the cross between your two frimpanzees.



blue = EE or Ee
yellow = ee

• What percent chance do these parents have of getting a child with blue skin? 3/4 75%

• What percent chance do these parents have of getting a child with yellow skin? 1/4 25%

• What percent chance do these parents have of getting a child with a homozygous dominant genotype? 1/4 25%

EE ↙ ↘

• What percent chance do these parents have of getting a child with a heterozygous genotype? 2/4 50%

Ee ↙ ↘

• What percent chance do these parents have of getting a child with a homozygous recessive genotype? 1/4 25%

ee ↙ ↘

- It is possible for two frimpanzees to not show a trait but for their child to show it. Example two blue frimpanzees can make a yellow frimpanzee. Explain how this is possible. Use your vocab words!!!

Each parent has 2 alleles it could possibly pass on to offspring. If both parents had a heterozygous genotype (one dominant and one recessive allele) it would be possible for blue parents (Ee & Ee) to make a yellow child (ee). The child would have to inherit the recessive allele from both parents.