

Pedigree and Punnett Square Review

What will we do?

We will apply the model of inheritance to Tongue Rolling.

Procedure

- Fill in the following chart with the information for Tongue Rolling. Assume that the allele for tongue rolling is completely dominant over the allele for not being able to roll tongue.

Key:

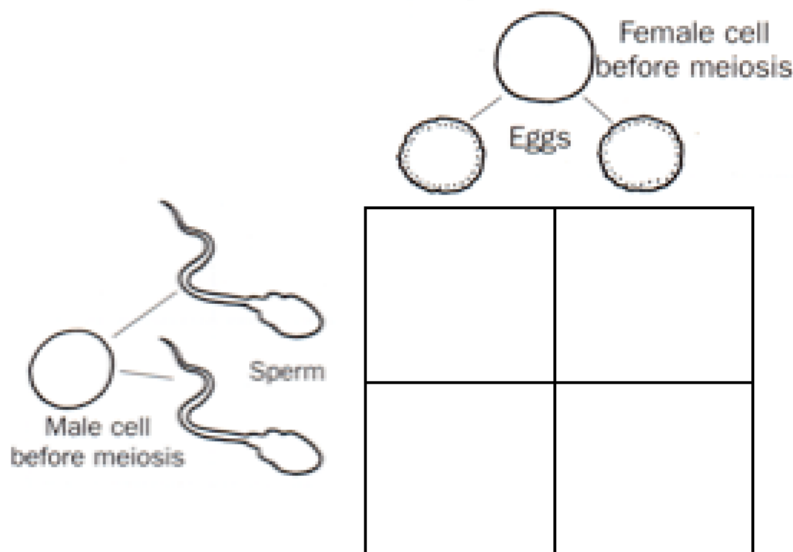
R = allele for **ABLE** to roll tongue

r = allele for **NOT** able to roll tongue

Genotype: Alleles (Instructions)	Homozygous OR Heterozygous	Phenotype (What you see or observe)
R, R		
R, r		
r, r		

Punnett Square Practice

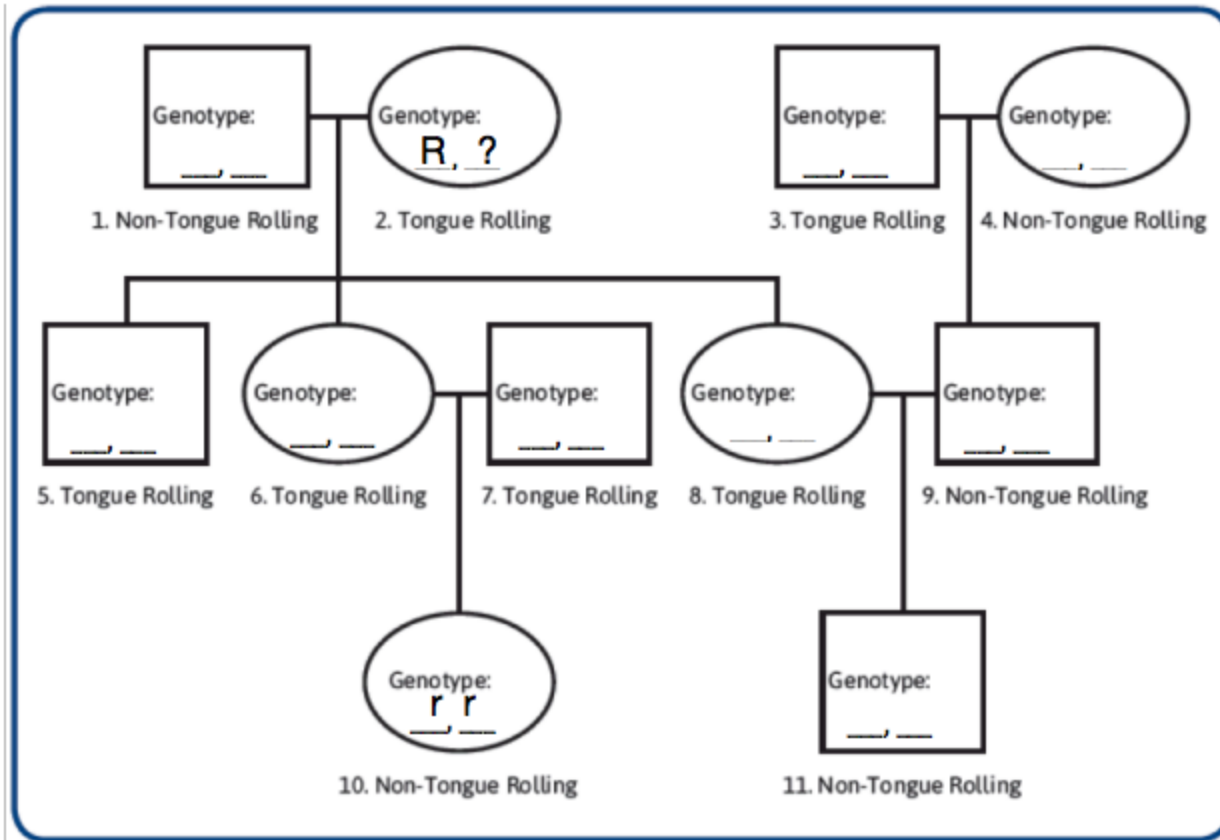
Complete a Punnett Square showing a cross between two parents who are both Heterozygous for the ability to roll their tongues. Be sure to fill in the alleles for the parents and the gametes!



Pedigree Puzzle

Keep the results from the Punnett Square in mind as you work to determine the genotypes in the Pedigree below.

1. Fill in an allele (r or R) on each ___ based on the phenotypes. (see # 10 as an example)
2. There is a ? for the one allele that cannot be determined. Think about WHY we can't determine that allele (in person 2).



Reflection Questions:

1. What clues did you use to determine the alleles? List at least 2 clues.
 - A.
 - B.
- 2.
2. Why is it not possible to determine one of the alleles for person 2? Be SPECIFIC (why are there two possibilities?)

Comparing and Contrasting Patterns of Inheritance

We have learned about 3 different ways a trait can be inherited, let's take a minute to look at how they are similar AND how they are different.

- Dominant and Recessive
- Incomplete Dominance
- Codominance

Similar:

1. Information carried on chromosomes made up of _____.
2. Gametes (sperm and egg) are formed during the process of _____.
3. Each parent contributes _____ allele to the offspring during fertilization.
4. Offspring get _____ their genetic information from each parent.

Different:

The biggest difference between all 3 is how the phenotype of the heterozygous genotype is expressed. Let's imagine that there is a species of flower that shows all 3 types of inheritance for petal color.

R = allele for producing red pigment

r = allele for not producing red pigment (so color would be white)

Complete the table below for what the flower color would look like for each genotype. The homozygous genotypes have been done for you. Think hard about what the heterozygous genotype would cause for phenotype for each type of inheritance.

Genotype	Dominant/Recessive Pattern Phenotype (color)	Incomplete Dominance Pattern Phenotype (color)	Codominant Pattern Phenotype (color)
R, R	Red	Red	Red
R, r			
r, r	White	White	White