

**Review Lecture Question #'s 158 and 159**

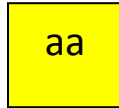
**Pedigree Analysis (beware of the Cable man)**

*\*\* Disclaimer. Do not try this at home. There is conflicting evidence about the single dominant gene inheritance pattern of the traits used.*

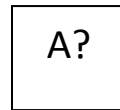
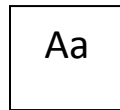
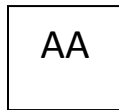


Fill in the pedigrees below using the following notation for the alleles of each trait

A filled circle or square will always be homozygous for the recessive allele



An open circle or square may be homozygous dominant, heterozygous, or the second allele may be unknown



**Hand Clasping**

Clasp your hands together (without thinking about it!). Most people place their left thumb on top of their right and this happens to be the dominant phenotype. Now, for fun, try clasp your hands so that the opposite thumb is on top. Feels strange and unnatural, doesn't it?

**Alleles:** L,l

**Dominant phenotype:** left thumb on top

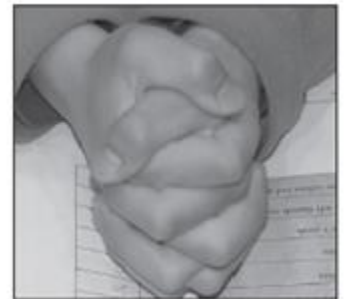
**Dominant genotype:** LL or Ll

**Recessive genotype:** ll

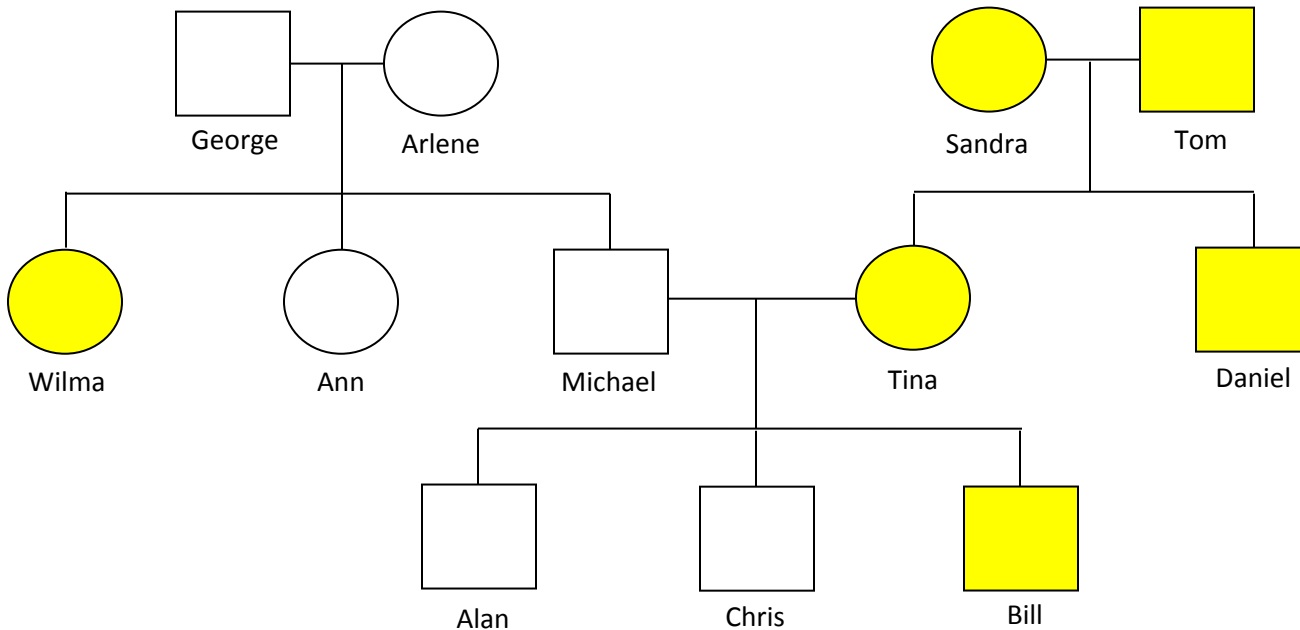
**Hand Clasping**



Cross Left Thumb Over Right



Cross Right Thumb Over Left



Name	Phenotype	Genotype	Explain how you know
George			
Arlene			
Sandra			
Tom			
Wilma			
Ann			
Michael			
Tina			
Daniel			
Alan			
Chris			
Bill			

### Tongue rolling

Without using the sides of your mouth, try to roll the lateral edges of your tongue up. About 70% of people are able to roll their tongues without pressing the sides of their mouths against their tongue.

**Alleles:** R, r

**Dominant phenotype:** Tongue roller

**Dominant genotype:** RR or Rr

**Recessive genotype:** rr

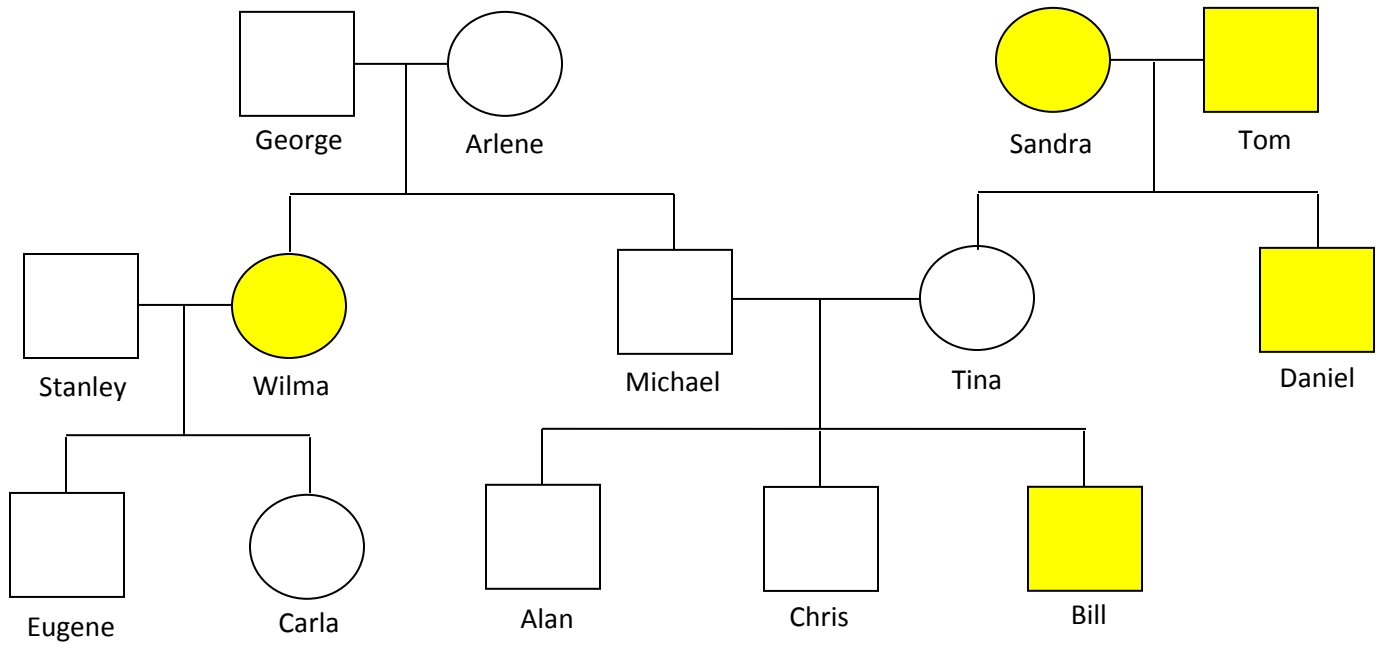
## Tongue Rolling



Can Roll Tongue



Can't Roll Tongue



Name	Phenotype	Genotype	Explain how you know
George			
Arlene			
Sandra			
Tom			
Stanley			
Wilma			
Michael			
Tina			
Daniel			
Eugene			
Carla			
Alan			
Chris			
Bill			

## Trichromatic Vision

When we say someone is color blind, we usually mean that they cannot see in the red spectrum of light. They see color just not as many colors as someone with normal trichromatic vision. The gene that allows us to see red wavelengths of light is on the X chromosome. You only need one good copy of the gene that makes the protein necessary to see red wavelengths of light, so seeing color is dominant to color blind.

**Alleles:** Male =  $X^C$ ,  $X^c$ , and Y

**Alleles:** Female =  $X^C$  and  $X^c$

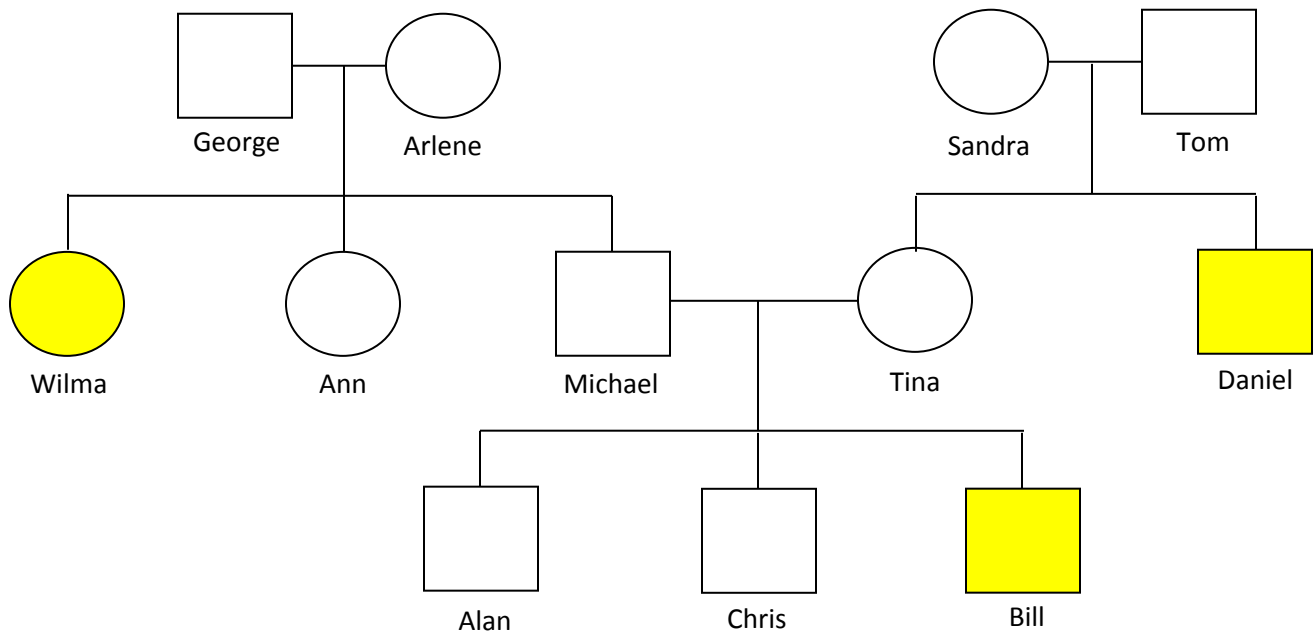
**Dominant phenotype:** sees color

**Dominant genotype:** Females  $X^C X^C$  or  $X^C X^c$

**Dominant genotype:** Males  $X^C Y$

**Recessive genotype:** Females  $X^c X^c$

**Recessive phenotype:** Males  $X^c Y$



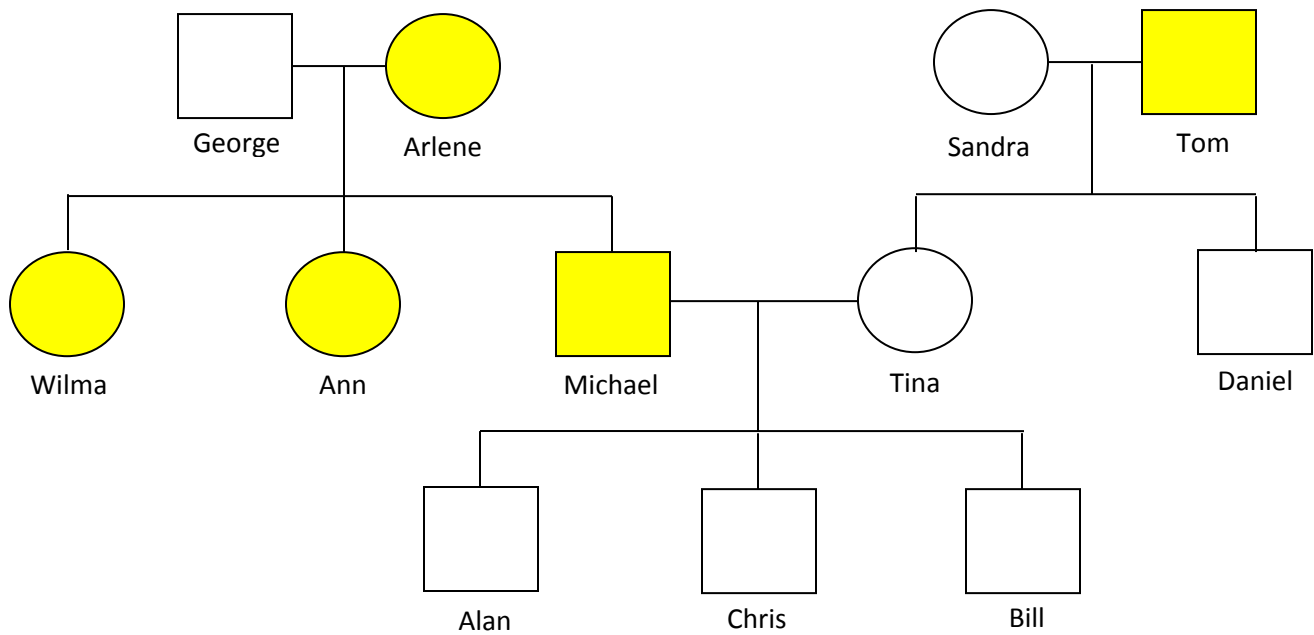
<b>Name</b>	<b>Phenotype</b>	<b>Genotype</b>	<b>Explain how you know</b>
George			
Arlene			
Sandra			
Tom			
Wilma			
Ann			
Michael			
Tina			
Daniel			
Alan			
Chris			
Bill			

## A genetic form of retinopathy

Retinopathy is a breakdown of the retina, which is the light sensing tissue of the eye. Your task is to figure out what type of inheritance pattern we have.

The cable man has been found out and neutered.

Shaded shape indicates **has retinopathy**. Open shapes indicate **normal retina**.



<b>Name</b>	<b>Phenotype</b>	<b>Genotype</b>	<b>Explain how you know</b>
George			
Arlene			
Sandra			
Tom			
Wilma			
Ann			
Michael			
Tina			
Daniel			
Alan			
Chris			
Bill			

