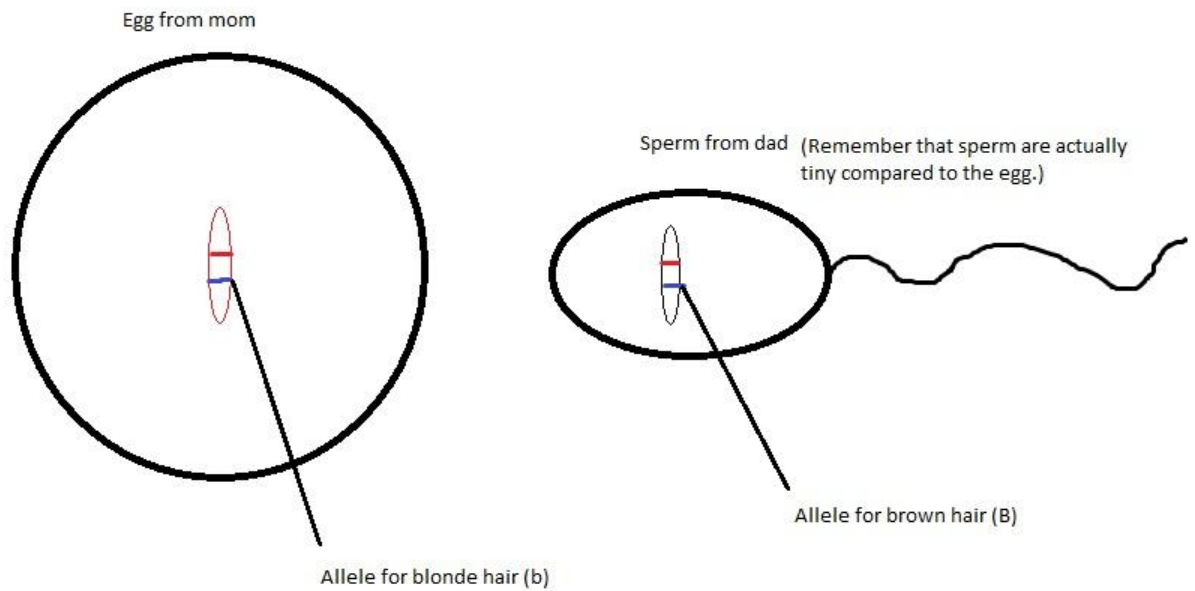


## Homozygous vs. Heterozygous

- **Genes** are the factors that control traits in an organism
  - o They help determine what you look like.
- **Alleles** are variations of a gene.
  - o An organism receives one allele from mom and one allele from dad
    - Example: In the following example. The child would receive one allele (b) from mom and one allele (B) from dad.
      - B is **dominant** while b is **recessive** so the child would express the trait from B.



**Heterozygous:** Different alleles

- Bb (We always write the dominant allele first.)

**Homozygous:** Same alleles

- **Homozygous dominant:** BB
- **Homozygous recessive:** bb

**Genotype:** What your genes actually are (BB, Bb, bb)

**Phenotype:** What you look like

Genotype	Phenotype
BB	Brown hair
Bb	Brown hair (dominant gene masks the trait of the recessive gene)
bb	Blonde hair

Here is a list of dominant and recessive traits. You do not need to memorize these.

	<b>DOMINANT TRAITS</b>	<b>RECESSIVE TRAITS</b>
eye coloring	brown eyes	grey, green, hazel, blue eyes
vision	farsightedness normal vision normal vision normal vision	normal vision nearsightedness night blindness color blindness*
hair	dark hair non-red hair curly hair full head of hair widow's peak	blonde, light, red hair red hair straight hair baldness* normal hairline
facial features	dimples unattached earlobes freckles broad lips	no dimples attached earlobes no freckles thin lips
appendages	extra digits fused digits short digits fingers lack 1 joint limb dwarfing clubbed thumb double-jointedness	normal number normal digits normal digits normal joints normal proportion normal thumb normal joints
other	immunity to poison ivy normal pigmented skin normal blood clotting normal hearing normal hearing and speaking normal- no PKU	susceptibility to poison ivy albinism hemophilia* congenital deafness deaf mutism phenylketonuria (PKU)

\* sex-linked characteristic

- List of dominant and recessive traits taken from

<http://www.blinn.edu/socialscience/LDThomas/Feldman/Handouts/0203hand.htm>

Questions:

1. If a person receives an allele for dimples from their mom and one allele for no dimples from their dad, what will their trait be? (Will they have dimples or no dimples?)  
**They will have dimples because it is the dominant allele.**
2. For a person to have straight hair, what must happen (without using a hot iron ☺)?  
**They must receive the allele for straight hair from both their mom and dad.**