

Name:

Date:

Period

### Biology: Human Inheritance Lab

Heredity is the passing on of traits, or characteristics, from parent to offspring. The units of heredity are called genes. Genes are found on the chromosomes in a cell. The combinations of genes for each trait occur by chance.

When one gene in a pair is stronger than the other gene, the trait of the weaker gene is masked, or hidden. The stronger gene is the dominant gene, and the gene that is masked is the recessive gene. Dominant genes are written as capital letters and recessive genes are written as lowercase letters. If both genes in a gene pair are the same, the trait is said to be homozygous, or pure. If the genes are not similar, the trait is said to be heterozygous, or hybrid. Sometimes genes are neither dominant nor recessive, resulting in a blending of traits.

The genetic make up of an individual is known as its genotype. The observable physical characteristics of an individual that are the result of its genotype are known as its phenotype. In humans, the sex of an individual is determined by the particular combination of the two sex chromosomes. Individuals that have two X chromosomes are female, and individuals with one X and one Y chromosome are male.

#### Procedure:

1. Create a space to flip your coin into; this can be done creating a triangle with three textbooks corner to corner.
2. Determine which partner will toss for the female parent and which will toss for the male. Remember, there are two genes for each trait.
3. Have the partner representing the male parent flip a coin into the well to determine the sex of the offspring. If the coin lands heads, the offspring is female. If it lands tails, the offspring is male. Record the sex of the offspring under observations.
4. For all of the coin tosses you and your lab partner will make, HEADS= DOMINANT and TAILS = RECESSIVE
5. You and your partner should now flip your coins into the well at the same time. Note: the coins should be flipped once for each trait.
6. Continue to flip the coins for each trait listed in the table in Figure 1. After each flip, record the trait of your offspring by recording it in the data table.
7. Using the recorded traits, draw the FACIAL FEATURES of your offspring in the space provided.

Trait	Gene from Mom	Gene from Dad	Genotype	Phenotype
FACE SHAPE (R)				
CHIN CLEFT (C)				
HAIR (H)				
WIDOW'S PEAK (W)				
EYE SPACING (E)				
EYE SHAPE (A)				
EYE POSITION (S)				
EYE SIZE (L1)				
EYELASH LENGTH (L2)				
EYEBROW SHAPE (B)				
EYEBROW POSITION (N)				
NOSE SIZE (L3)				
LIP SHAPE (T)				
EAR SIZE (L4)				
MOUTH SIZE (L5)				
FRECKLES (F)				

Traits	Dominant (both heads)	Hybrid (one head, one tail)	Recessive (both tails)
Shape of face	round (RR)	round (Rr)	square (rr)
Cleft in chin	absent (CC)	absent (Cc)	present (cc)
Hair	curly (HH)	wavy (Hh)	straight (hh)
Widow's peak	present (WW)	present (Ww)	absent (ww)
Spacing of eyes	close together (EE)	normal distance (Ee)	far apart (ee)
Shape of eyes	almond (AA)	almond (Aa)	round (aa)
Position of eyes	straight (SS)	straight (Ss)	slant upward (ss)
Size of eyes	large (LL)	medium (Ll)	small (ll)

Traits	Dominant (both heads)	Hybrid (one head, one tail)	Recessive (both tails)
Length of eyelashes	long (LL)	long (Ll)	short (ll)
Shape of eyebrows	bushy (BB)	bushy (Bb)	line (bb)
Position of eyebrows	not connected (NN)	not connected (Nn)	connected (nn)
Size of nose	large (LL)	medium (Ll)	small (ll)
Shape of lips	thick (TT)	normal (Tt)	thin (tt)
Size of ears	large (LL)	normal (Ll)	small (ll)
Size of mouth	large (LL)	medium (Ll)	small (ll)
Freckles	present (FF)	present (Ff)	absent (ff)
Dimples	present (DD)	present (Dd)	absent (dd)