# Heredity Face Project

What would your baby look like if both you and your imaginary spouse have hybrid gene pairs for each of the facial traits illustrated in the following pages? That is, both parents have one dominant and one recessive gene for each trait. To determine the facial appearance of your child, you will flip a coin twice for each trait, to represent one gene from each parent. <u>Heads will represent dominant traits, while Tails will represent recessive traits</u>. Record the genetic contributions of each parent on the chart provided. When you have determined all of the genotypes (gene pairs) and phenotypes (physical characteristics), draw and color the way the baby will look after he or she has reached your age (middle school).

A few of these traits are believed to be inherited in the explained manner. However, most of the traits in this activity were created to illustrate how human heredity works in a simplified model and to reinforce basic genetics principles. Inherited traits are actually much more complicated than illustrated here. Most of these facial characteristics are determined by the blending and combination of many gene pairs. <u>Follow these steps</u>:

1. Write your name (and partner's name, optional) and "due" date on your chart.
2. Flip a coin to determine the <u>gender</u> of the child. Heads equals a "Y" chromosome, indicating a baby <u>boy</u>. Tails equals an "X" chromosome, indicating a baby <u>girl</u>. (Which parent contributes the gene that determines gender?)
3. Name your child.
4. Flip a coin <u>twice</u> for each <u>trait</u> listed below (IN CAPS #1-30). Be aware that "Skin Color" and "Eye Color" require flipping the coin several times to represent multiple gene pairs. Follow the directions given.
5. When finished, draw your child <u>according to the traits</u> you have listed. Use the <u>whole paper</u> and <u>do not draw the body</u>.
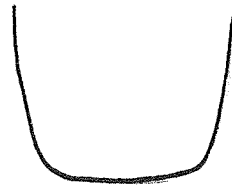
# Genotypes and Phenotypes

## 1. FACE SHAPE:

Round (RR or Rr)                                    Square (rr)

## 2. CHIN PROMINENCE:

Very Prominent (VV or Vv)                          Less Prominent (vv)

## 3. CHIN SHAPE- Only do this trait if CHIN PROMINENCE is RR or Rr

Round (RR or Rr)                                   Square (rr)

## 4. CLEFT CHIN:- Only do if Chin Prominence is RR or Rr

Present (AA or Aa)                                 Absent (aa)

## 5. SKIN COLOR:

To determine the color of skin, flip the coin for all 3 gene pairs. Flip twice to determine (AA, Aa or aa), twice for (BB, Bb or bb) and twice for (CC, Cc or cc). Record all 3 gene pairs on your sheet. Each capital letter represents an active gene for skin pigmentation (darker skin). Count up the number of capital letters to determine the skin color below.

6 capitals = very dark/ black          2 capitals = light brown/beige

5 capitals = very dark brown           1 capital = very light beige
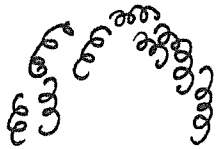
4 capitals = dark brown                0 capitals = white

3 capitals = medium brown

## 6. HAIR TYPE:

**Curly (CC)**          **Wavy (Cc)**          **Straight (cc)**

## 7. HAIR COLOR:

**Dark Brown/Black (HH)**          **Light Brown (Hh)**          **Blonde (hh)**

## 8. WIDOW'S PEAK

**Present (WW or Ww)**          **Absent (ww)**

## 9. SHADE OF EYEBROWS

**Very Dark (HH)**          **Medium Dark (Hh)**          **Light (hh)**
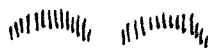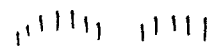
## 10. EYEBROW THICKNESS

**Bushy (BB or Bb)**          **Fine (bb)**

## 11. EYEBROW PLACEMENT

**Not connected (NN or Nn)**          **Connected (nn)**

12. **EYE COLOR:** To determine the color of the eyes, flip your coin for two gene pairs - (AA, Aa or aa) and (BB, Bb or bb). Use the chart below to determine your baby's eye color.

AABB --- Dark brown

AABb, AaBB, AaBb --- Light brown

AAbb, aaBB --- Dark blue

Aabb, aaBb --- Light blue

aabb --- Green

13. **EYE DISTANCE:**

| Close Together (EE) | Average Distance (Ee) | Far Apart (ee) |

14. **EYE SIZE:**

Large (EE)     Medium (Ee)     Small (ee)

15. **EYE SHAPE:**

Almond (AA, Aa)     Round (aa)

16. **EYE SLANT:**

Horizontal (HH, Hh)     Upward Slant (aa)

17. **EYELASHES:**

Long (LL, Ll)     Short (ll)

## 18. MOUTH LENGTH:

Long (MM)  Average (Mm)  Short (mm)

## 19. LIP THICKNESS:

Thick (LL, Ll)  Thin (ll)

## 20. BOTTOM LIP PROTRUDING (THRUST FORWARD):

Very Protruding (HH)  Slightly (Hh)  Not Protruding (hh)
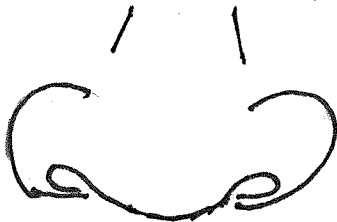
## 21. DIMPLES IN CHEEKS:

Present (DD, Dd)  Absent (dd)

## 22. NOSE SIZE:
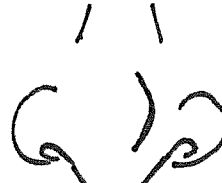
Large (NN)  Medium (Nn)  Small (nn)

## 23. NOSE SHAPE:

Round (RR, Rr)  Pointed (rr)

## 24. NOSTRIL SHAPE:

Round (RR, Rr)                    Pointed (rr)

## 25. EARLOBE ATTACHMENT:

Free (FF, Ff)                    Attached (ff)

## 26. EARPOINT:

Present (DD, Dd)                Absent (dd)

## 27. EAR DIMPLE:

Present (PP, Pp)                Absent (pp)

## 28. HAIR ON EARS (MALES ONLY):

Absent (HH, Hh)                Present (hh)

## 29. FRECKLES ON CHEEKS:

Present (FF, Ff)                Absent (ff)

## 30. FRECKLES ON FOREHEAD:

Present (FF, Ff)                Absent (ff)