

## Tracing Genetic Traits in Your Family

While I wish we could trace genetically determined behavioral traits in your family, much less is known about the genetics of behavior, with the exception of genetic disorders that have an effect on behavior (like Down Syndrome or PKU). Also it is probably harder to find behaviors that involve a single gene and simple Mendelian inheritance patterns. Even some of the traits below may not show simple inheritance patterns (e.g. see our web reference on tongue-rolling). So while we will be examining some physical features, please keep in mind that the same principles would apply to inheritance of many behavioral propensities.

Your task is to select 6 of the following traits that you think some but not all of your family members might show, determine the phenotypes present in your family, and see what you can conclude about genotypes. All of you may not have the same access to family members but here are some options: 1) grandparents, parents and yourself, 2) parents, siblings and yourself, 3) parents, you and your spouse and kids, 4) your parents, a married sibling and their spouse and kids, 5) your parents, significant other's parents, you and your significant other, and a prediction of the genotypes/phenotypes possible in your future children. You could also use a friend's family or aunt & uncle and cousins. Those of you in a relationship might want to include your partner just for fun and make predictions about the traits possible in future children.

### Traits to Choose From

Dominant	Recessive
Free, unattached earlobes (U <sub>-</sub> )	vs attached earlobes (uu)
Dimple(s) (D <sub>-</sub> )	vs no dimples (dd)
Straight thumb (S <sub>-</sub> )	vs curved, hitchhiker's thumb (ss)
Curved pinky (P <sub>-</sub> )	vs straight pinky (pp)
Mid-digital hair on some fingers (M <sub>-</sub> )	vs no hair (mm)
Longer 2nd toe (T <sub>-</sub> )	vs 2nd toe that's shorter than your big toe (tt)
Pointed widow's peak hairline (W <sub>-</sub> )	vs straight, no peak hairline (ww)
Freckles (F <sub>-</sub> )	vs no freckles (ff)
Can trigger sneeze by looking at sun/bright light (B <sub>-</sub> )	vs not able to (bb)
Hand clasp - fold hands with left thumb on top (L <sub>-</sub> )	vs right thumb on top (ll)
Folds arms with right arm on top (A <sub>-</sub> )	vs left arm on top (aa)
Able to roll tongue in tube shape (R)	vs not able to (rr)

Family Members	Trait 1:	Trait 2:	Trait 3:	Trait 4:	Trait 5:	Trait 6:

In each box, record the **phenotype** shown by each family member for each trait. Then figure out what you can conclude about their **genotype**, given all the family data you have collected.

Example : If mom and dad both show the dominant phenotype, but you show the recessive (dd) phenotype, we can conclude that both mom and dad must be heterozygous for the trait (e.g. Dd).