

Human Mendelian Traits

Mendelian Traits are those traits which follow Mendel’s rules of only 2 possible versions of a gene (1 dominant, 1 recessive). There are only a few examples of this in humans.

1. Use the chart below to determine your phenotype (observable characteristic) and possible genotype(s) (a pair or pairs of alleles). Since you cannot do a genetic test right now, if you have the dominant phenotype, you should include both the homozygous and heterozygous genotypes—see the example for Advanced Sleep Phase Syndrome in the first row.

[Note: Review each trait to ensure that students know what to look for.]

Trait	Possible alleles	Your Phenotype	Your Genotype(s)
Advanced Sleep Phase Syndrome	Wakes up very early (E) Wakes up at normal time (e)	Ex., wakes up very early	EE (homozygous) or Ee (heterozygous)
Achoo Syndrome	Sneezes in the sun (A) Doesn’t sneeze in the sun (a)		
Ear wax (wet/dry)	Wet (W) Dry (w)		

2. Did you have mostly dominant or recessive traits? _____
[Note: Discuss with students what may affect the balance between the number of dominant and recessive traits. Use the class data to point out that a dominant gene isn’t always the most common trait observed. For examples, your students’ data may show that there are fewer people with Achoo Syndrome, even though it is a dominant trait.]
3. Compare your findings with other students.
[Note: This is to help students practice applying the terms “dominant” and “recessive.” Clarify so that students understand that the dominance and recessiveness of these traits do not indicate that one is better than the other. If needed, have students consider how a recessive gene, although not expressed phenotypically in a parent, can be passed to offspring, keeping the recessive gene in the gene pool.]
 - a. For which trait were most students dominant?
 - b. For which trait were most students recessive?

Name: _____
Class period: _____

Date _____
Page | 2

4. First complete the Punnett Squares below using your own genotype for each trait. If you have a dominant trait, choose to use either the heterozygous or homozygous genotype. The other person's genotype is provided. After completing the Punnett Square, identify possible phenotypes of offspring and the probability of each phenotype in percentage.

[Note: Use the following exercises to assess students' proficiency and provide additional instructions as needed, so that they become comfortable using the Punnett square.]

- a) Achoo Syndrome genotypes: Yours _____ & the other person's Aa
List possible Phenotypes % (Probability of inheritance)

- b) Ear wax genotypes: Yours _____ & the other person's ww
List possible Phenotypes % (Probability of inheritance)
