



Name: _____ Date: _____ Period: _____

Honors Biology: Extensions of Mendelian Genetics (9.11-9.15) Guided Reading
How do Mendel's Laws of inheritance explain how traits are passed from one generation to the next?

1. On your own...Read Sections 9.11-9.15

2. Define the following terms:

- Complete dominance: the dominant allele determines phenotype if homo. or heterozygous
- Incomplete dominance: phenotype falls in between homozygous dominant and recessive
- Codominant: both alleles are expressed
- Pleiotropy: 1 gene ... many traits
- Polygenic inheritance: many genes ... 1 trait

3. How is incomplete dominance different from what Mendel observed with peas?

Mendel's characters were determined by complete dominance

4. Explain how incomplete dominance can be described as a blending of phenotype, but NOT a blending of genotype? (Can we get red and white flowers as offspring from a pink x pink cross? Why?)

Red flowers = RR pink = Rr
white = rr

r allele doesn't "blend" ... just phenotype blends

5. Explain how the ABO blood group phenotypes is an example of alleles which are codominant:

Because phenotype "AB"
has both I^A and I^B alleles
and both are expressed.

6. Describe sickle cell disease? Is there a difference between having the disease and having the trait?

↳ red blood cells are crescent-shaped
having disease = homo. rec.
" trait = heterozygous

7. How can having a disease be an evolutionary advantage?

Yes ... malaria (fatal) is
"prevented" if you carry
the allele for sickle-cell ...
so you survive to reproduce

8. Describe how genetic factors and environmental factors contribute to skin color: (Does the environment change one's genotype?)

↳ alleles contribute to phenotype

↳ U.V. exposure
can darken skin
(phenotype)

but it can NOT
~~can~~ change
alleles.