

READING GUIDE

What you are expected to learn from these readings:

- ◆ From Module 1. *Children resemble their parents.*

You should be able to:

1. State what organism Mendel used in his experiments and why.
Don't worry about the parts of flowers or how flowering plants reproduce. Just understand that Mendel had ways of controlling which plants "mated" with other plants, and that seeds are the next plant generation. (In peas, the green balls that we eat as peas as technically seeds.)
2. Describe why Mendel can be considered the Father of Genetics. (What was his contribution?)
The three Laws of Inheritance are important, but they will be developed in a later module, as well as in class.

- ◆ From Module 2. *Genes come in pairs.*

You should be able to:

1. Give an example of what Mendel meant when he stated that traits came in one of two alternative forms.
2. Explain what a "pure-bred" strain is.
3. Give examples of a phenotype (either in peas or in other organisms).
4. Be able to define the terms *allele* and *genotype*.
5. Be able to explain the difference between a genotype and a phenotype.

- ◆ From Module 3. *Genes don't blend.*

You should be able to:

1. Explain what a hybrid is.
2. Explain what Mendel discovered when we crossed two different pure-bred plants together. (What did he see in the offspring? Blending? Something else unexpected?)

- ◆ From Module 4. *Some genes are dominant.*

You should be able to:

1. Explain the difference between the dominant form of a trait and the recessive form of a trait.

2. Be able to define the terms *homozygous* and *heterozygous*.
3. Predict the outcome when a yellow-seed pea plant (YY) is crossed with a green-seed pea plant (yy). What are the genotypes and phenotypes of the offspring?
4. Predict the outcome when two hybrid yellow-seed pea plants (Yy) are crossed together. What are the genotypes and phenotypes of the offspring?

◆ From Module 5. *Genetic inheritance follows rules.*

You should be able to:

1. Explain what Mendel's law of segregation stated.
2. Be able to use a Punnett square to show your predictions for the following crosses (from #3 and #4 in Module 4 above):
 - YY x yy
 - Yy x Yy

◆ From Module 13. *Mendelian laws apply to human beings.*

You should be able to:

1. List a couple of human genetic conditions that follow Mendel's laws. (A list is provided on the first page of the module. Pick two or three that are familiar to you.)
2. Explain what a pedigree is, and what the circle and square symbols represent.

Note: the animation uses hemophilia as its example, which is a trait that is carried on the sex chromosomes. As a result, it is inherited in a way that may not make sense compared to Mendel's pea plants. We'll cover sex-linked traits in a few weeks. All I care about here is that you understand how we can map out family relationships with these pedigree diagrams.