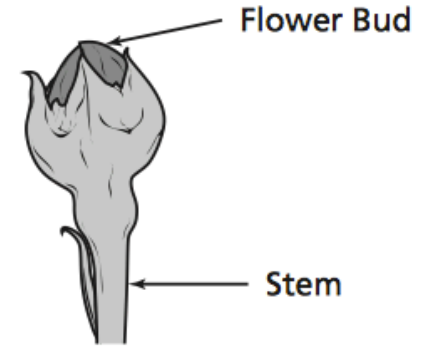


56

The picture below shows a flower.



Bell Work

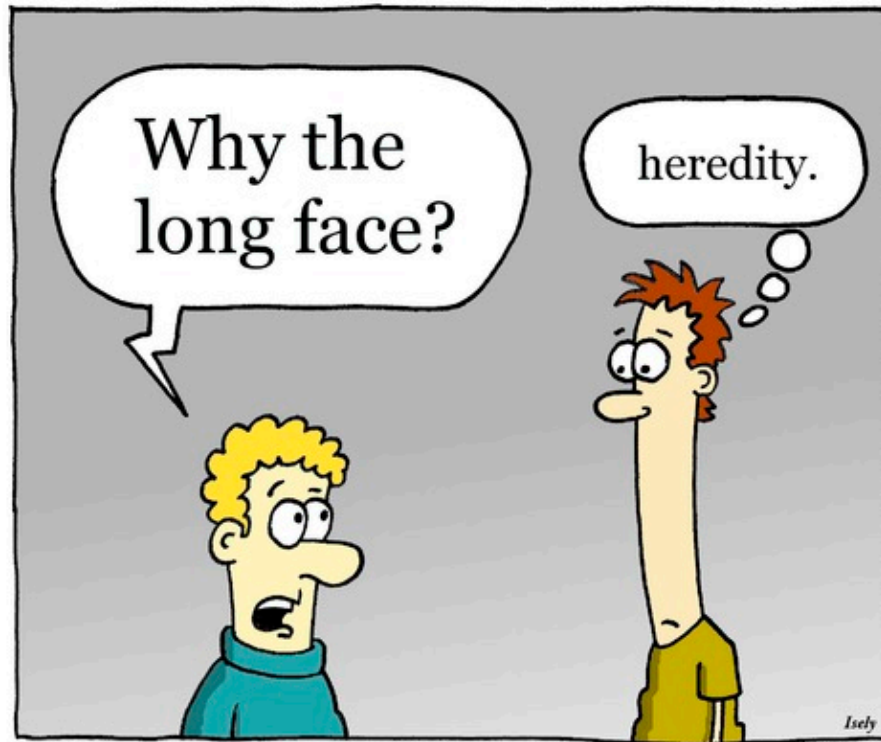
What part of the flower surrounds and protects the bud?

- F** stamens
- G** anthers
- H** petals
- J** sepals

18 What flower parts must be pollinated in order for a plant to produce seeds?

- F** ovules
- G** anthers
- H** filaments
- J** petals

You must have an explanation and page number.
Reminder! Your vocab is due Thursday. The quiz is Friday.



Chapter 8 Section 1 Day 1

I can the relationship among genes, chromosomes, and inherited traits

What You'll Learn

- Explain how traits are inherited
- Identify Mendel's role in history of genetics
- Use Punnett Squares to predict the results of the crosses
- Compare and contrast the difference between an individual's genotype and phenotype

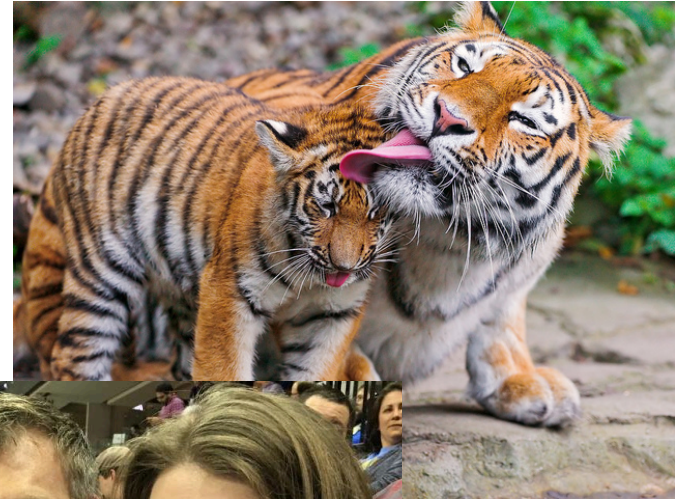
Why You Need to Know It

- Heredity and genetics help explain why people are different



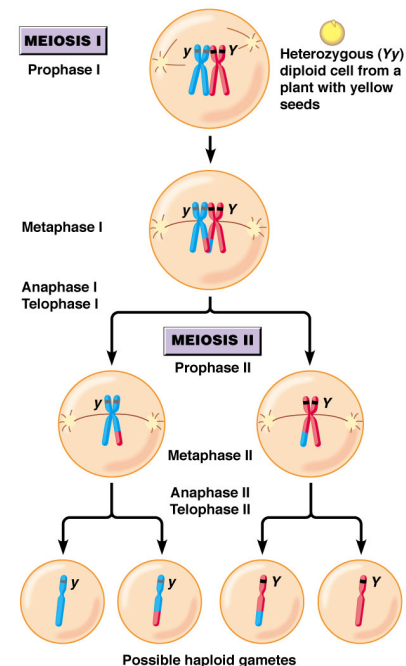
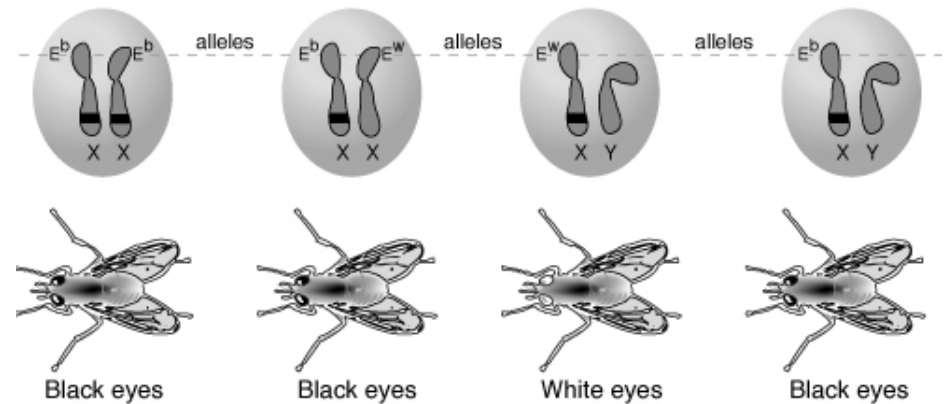
Inheriting Traits

- Eye color, nose shape, and many other physical features are some of the traits that are inherited from parents.
- An organism is a collection of traits, all inherited from its parents.
- Heredity is the passing of traits from parent to offspring.



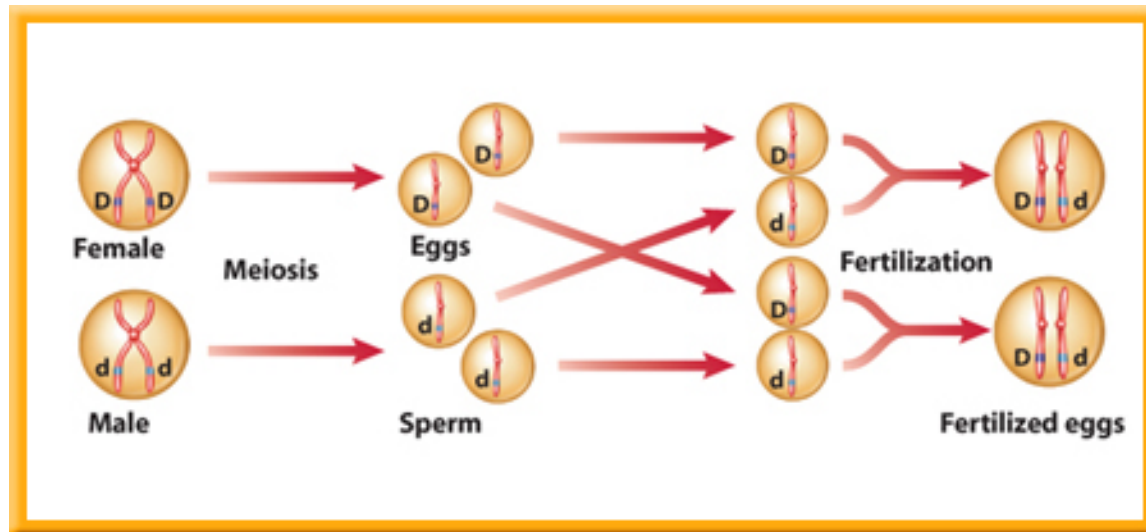
What is genetics?

- Generally, genes on chromosomes control an organism's form and function.
- The different forms of a trait that a gene may have are called alleles (uh LEELZ).
- When a pair of chromosomes separates during meiosis, alleles for each trait also separate into different sex cells.



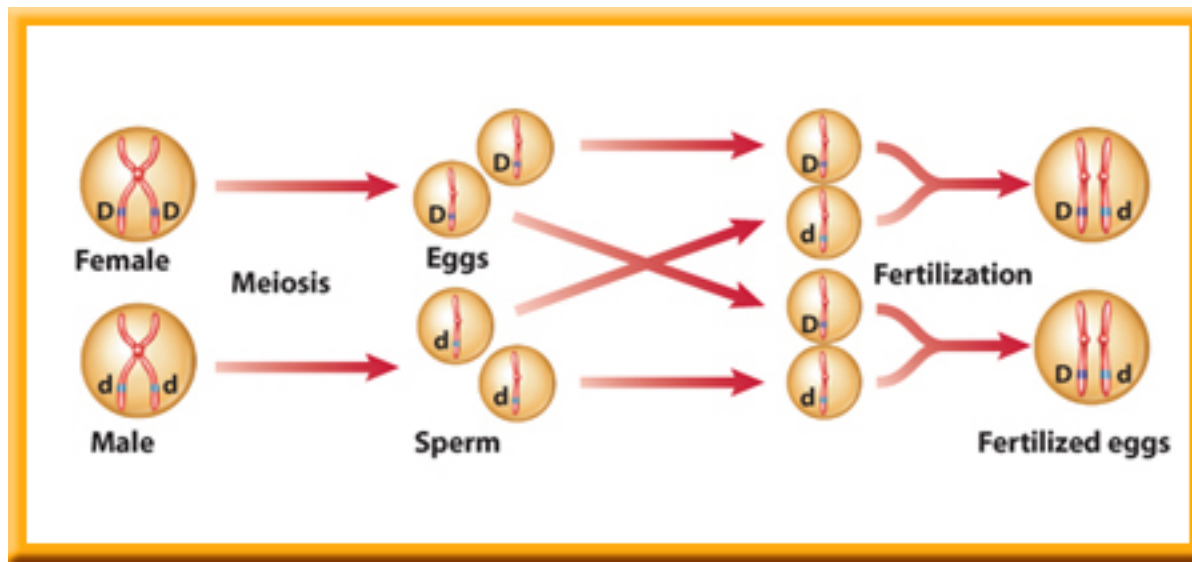
What is genetics?

- Every sex cell has one allele for each trait.
- The study of how traits are inherited through the interactions of alleles is the science of **genetics** (juh NE tihks).



Question

- According to this diagram, if meiosis proceeds correctly, how many alleles of a particular gene can a female pass on to her offspring?
- Answer = Although she has two alleles of each gene, a mother can pass only one allele to her offspring. Meiosis separates alleles so that eggs have only one allele for each gene. The new individual then gets one allele from the mother and the other from the father.



Mendel – The Father of Genetics



- **Gregor Mendel** began experimenting with garden peas in 1856.
- Mendel made careful use of scientific methods, which resulted in **the first recorded study of how traits pass from one generation to the next.**

Mendel – The Father of Genetics

- Mendel was the first to trace one trait through several generations.
- He was also the **first to use the mathematics of probability to explain heredity.**
- **Probability** is a branch of mathematics that helps you **predict the chance that something will happen.**



<http://www.biography.com/people/gregor-mendel-39282>

Question















- How did Gregor Mendel use his knowledge of mathematics in his study of heredity in pea plants?
- Answer = Mendel was the first person to use the mathematics of probability to explain heredity. Probability is the branch of mathematics that helps you predict the chance that something will happen.

Genetics in a Garden

- Each time Mendel studied a trait, he crossed two plants with different expressions of the trait and found that the new plants all looked like one of the two parents.
- He called these new plants **hybrids** (HI brudz) because they received **different genetic information, or different alleles, for a trait from each parent.**

Genetics in a Garden

- An organism that always produces the same traits generation after generation is called a **purebred**.
- Tall plants that always produce seeds that produce tall plants are **purebred** for the trait of tall height.

Traits Compared by Mendel							
Traits	Shape of Seeds	Color of Seeds	Color of Pods	Shape of Pods	Plant Height	Position of Flowers	Flower Color
Dominant Trait	Round 	Yellow 	Green 	Full 	Tall 	At leaf junctions 	Purple 
Recessive Trait	Wrinkled 	Green 	Yellow 	Flat, constricted 	Short 	At tips of branches 	White 

Dominant and Recessive Factors

- In his experiments, Mendel used pollen from the flowers of purebred tall plants to pollinate by hand the flowers of purebred short plants.
- This process is called cross-pollination.
- He found that tall plants crossed with short plants produced seed that produced all tall plants.

Dominant and Recessive Factors

- Mendel called the tall form the **dominant** (DAH muh nunt) factor because it dominated, or covered up, the short form.
- He called the form that seemed to disappear the **recessive** (rih SE sihv) factor.



Widow's Peak
hair line



Straight
hair line

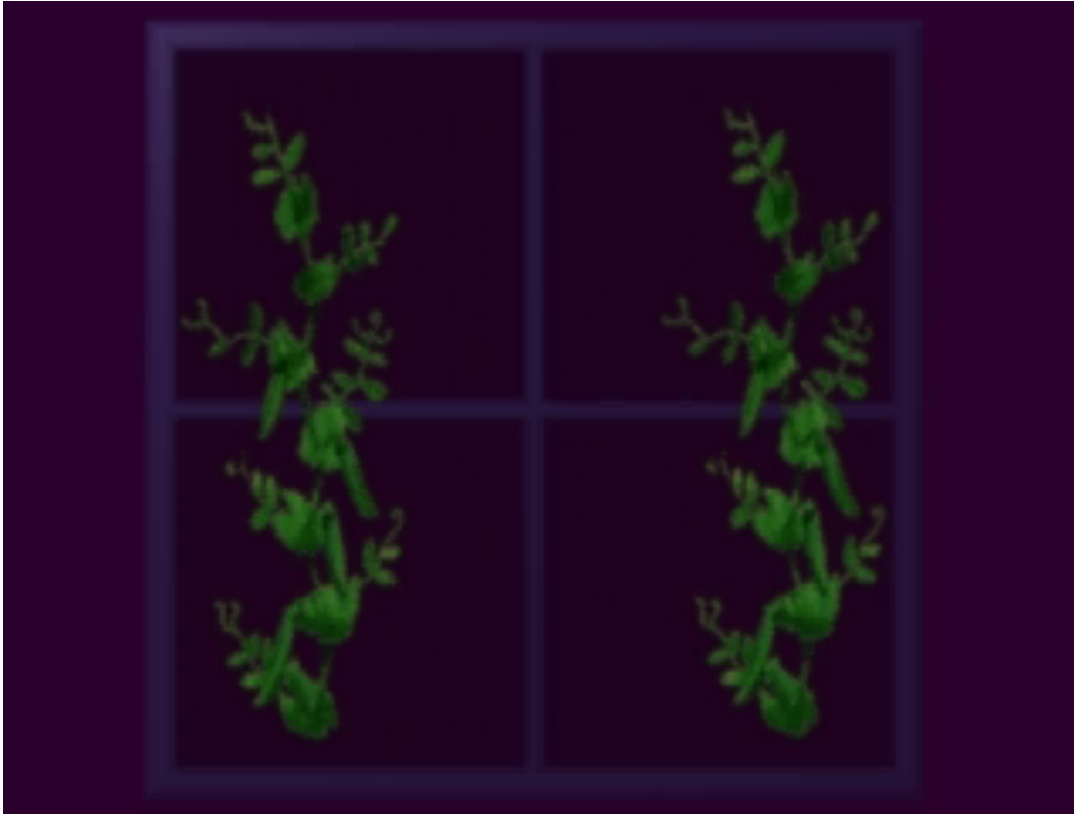
Question

- Mendel crossed pea plants that were pure-bred for yellow seeds with plants that were pure-bred for green seeds. All the offspring of this cross had yellow seeds. Based on these results, which form of color was recessive and which was dominant?
- Answer = Green seed color was recessive and yellow seed color was dominant. Mendel called the form that seemed to disappear (green in this case) recessive and the form that covered up (yellow in this case) dominant.

Using Probability to Make Predictions

- Mendel also dealt with probabilities.
- One of the things that made his predictions accurate was that he worked with large numbers of plants.
- He studied almost 30,000 pea plants over a period of eight years.
- By doing so, Mendel increased his chances of seeing a repeatable pattern.

Punnett Squares



- How could you predict what the offspring would look like without making the cross?
- A handy tool used to predict results in Mendelian genetics is the **Punnett** (PUH nut) **square**.

Punnett Squares

- In a Punnett square, letters represent dominant and recessive alleles.
- An uppercase letter stands for a dominant allele.
- A lowercase letter stands for a recessive allele.

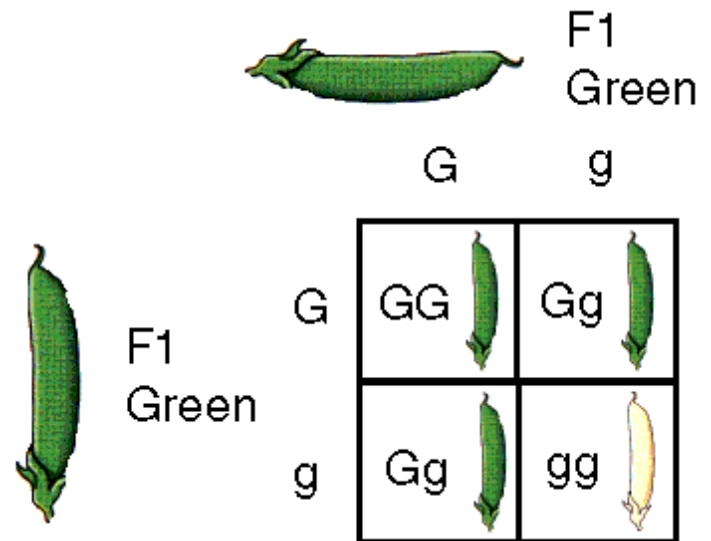
		Parent (Y y)	
		Y	y
Parent (Y y)	Y	YY	Yy
	y	Yy	yy

Punnett Squares

- They show the **genotype** (JEE nuh tipe), or genetic makeup, of an organism.
- The way an organism looks and behaves as a result of its genotype is its **phenotype** (FEE nuh tipe)

Alleles Determine Traits

- Most cells in your body have two alleles for every trait.
- These alleles are located on chromosomes within the nucleus of cells.
- An organism with **two alleles that are the same** is called **homozygous** (hoh muh ZI gus).
- An organism that has **two different alleles** for a trait is called **heterozygous** (he tuh roh ZI gus).



Exit Ticket

- Watch Brain Pop
 - <https://www.brainpop.com/science/cellularlifeandgenetics/heredity/>
- Answer quiz questions.