

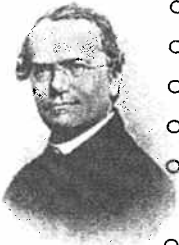
# WHAT IS GENETICS?

Name \_\_\_\_\_  
Student NOTES—not graded!

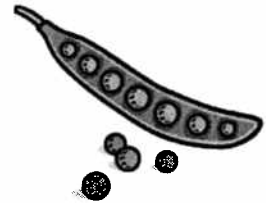
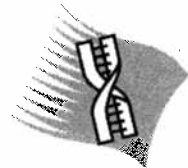
## HEREDITY & GENETICS

- Heredity = The passing of traits from \_\_\_\_\_ to \_\_\_\_\_.
- Traits are controlled by \_\_\_\_\_, so therefore GENETICS is the study of how traits are \_\_\_\_\_ through the action of alleles.

## GREGOR MENDEL



- First known geneticist and "\_\_\_\_\_ of genetics"
- Was an Austrian monk and was born in \_\_\_\_\_.
- Did most of his genetic studies on \_\_\_\_\_ plants.
- He made careful observations and strictly adhered to the \_\_\_\_\_.
- He performed cross-pollination by becoming the \_\_\_\_\_ himself, and controlling which plants mixed.
- Some traits Mendel worked with were the \_\_\_\_\_ of pea and its pod, color and shape of \_\_\_\_\_, plant \_\_\_\_\_, flower \_\_\_\_\_ and flower color.



## ALLELES

- Are one \_\_\_\_\_ of a gene.
- Sex cells have \_\_\_\_\_ form of a gene on their chromosomes.
- Body cells have \_\_\_\_\_ forms or ALLELES for a single gene.
- One may be \_\_\_\_\_ over another. If this happens, the dominant gene is the one expressed. If not, the recessive trait is expressed.

## DOMINANT & RECESSIVE

- A dominant trait will **always** be expressed and will \_\_\_\_\_ a recessive trait.
- A recessive trait can \_\_\_\_\_ be expressed if there are no \_\_\_\_\_ alleles present.
- **Example:** Eyecolor—Brown color is \_\_\_\_\_ and blue is recessive. A person can have a brown allele and a blue allele, but still have \_\_\_\_\_ eyes, because the brown allele is dominant and "\_\_\_\_\_ " the blue allele.
- **Generally,** dominant alleles are represented with a \_\_\_\_\_ letter, and recessive alleles are represented with a \_\_\_\_\_ letter

Each organism is represented by \_\_\_\_\_ letters, one for each allele.

- "Purebred" species have two alleles of the \_\_\_\_\_ trait, and therefore would be represented by two of the same letters. This is called \_\_\_\_\_. **For instance:** BB or bb
- Species with two different alleles or two different forms of the gene would have two different \_\_\_\_\_ and be called heterozygous. **For instance:** Bb
- The **alleles** present in the organism are referred to as it's \_\_\_\_\_. For instance BB, Bb or bb.
- The **PHYSICAL** trait that shows, regardless of genotype is called a \_\_\_\_\_. **For instance:** blue or brown eyes.

# PROBABILITY

- Helps predict the \_\_\_\_\_ that something will happen.
- **Example:** the probability of throwing heads or tails on a coin is \_\_\_\_\_% (1/2 chances)
- Your predictions become more \_\_\_\_\_ with the more trials you run.



# USING A PUNNETT SQUARE

- Used to help predict Mendelian genetics

## STEPS FOR USING THE PUNNETT SQUARE:

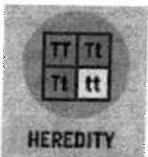
- 1) One parent's alleles (**GENOTYPE**) goes along the top.
- 2) The other parent's alleles goes down the side.
- 3) You fill in the squares like doing the *communicative* property of multiplication.
- 4) See below:

Let's say the parents are Bb and Bb (the same genotype). What would be their phenotype? \_\_\_\_\_

	B	b
B		
b		

...So you would predict the offspring of these parents to be:

- \_\_\_\_\_ BB or Brown Eyes
- 2/4 or \_\_\_\_\_ to be Bb or \_\_\_\_\_ eyes
- \_\_\_\_\_ to be bb or \_\_\_\_\_ eyes



HEREDITY BY BRAINPOP

- 1) What do we call different forms a gene may have for a trait?
- 2) What height of pea plant (tall or short) did Mendel find to be dominant?
- 3) Which kind of trait can't be passed from parent to child?
  - a) Eye color
  - b) height
  - c) broken arm

## LET'S TRY SOME PRACTICE PROBLEMS...

1. Hamster Fur


3. Rat Fur


2. Cow Coat Color


4. Pea Pods
