

**Mendel: Understanding Inheritance** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Period:\_\_\_\_\_\_\_\_\_\_\_\_

**What are TRAITS?**

- Traits are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

- For example, being \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

- Traits are \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and are passed down from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Who was GREGOR MENDEL?**

* Gregor Mendel was an Austrian monk, who lived in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* He conducted \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of experiments on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to

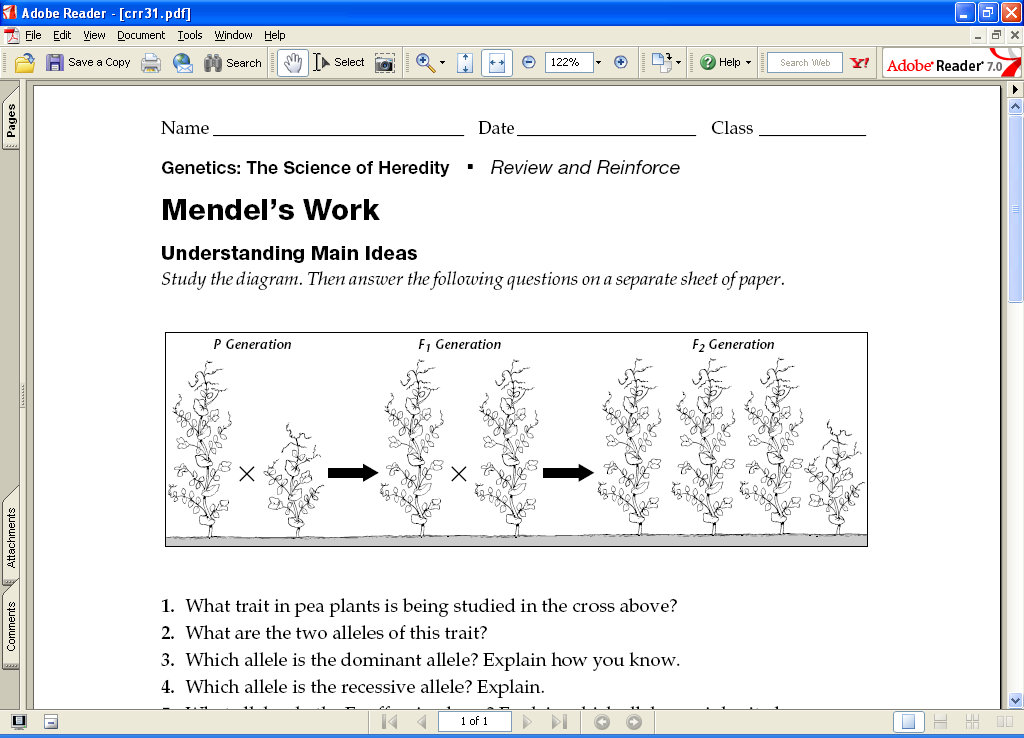
see how \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ were passed down from generation to generation.

* Mendel is known as the “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” for figuring out

the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**What type of experiments did Mendel do?**

* Mendel crossed pea plants with different traits (eg. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_).
* He started with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plants (showed the same trait for many generations).
* He crossed a \_\_\_\_\_\_\_\_\_\_ parent with a \_\_\_\_\_\_\_\_\_\_\_\_ parent.



Tall

Short

Tall

Tall

Tall

Short

Tall

Tall

The 1st generation of offspring were \_\_\_\_\_\_\_\_\_ ! In the 2nd generation, the lost short trait

The \_\_\_\_\_\_\_\_\_\_\_\_\_ trait was \_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_ of the offspring.

**What are Mendel’s rules of inheritance?**

* Mendel figured out that:
  + Traits are controlled by \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” that are

inherited from your \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* + Some factors are “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” (they \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the other factor).

(For example, the dominant tall gene hides the recessive short gene in pea plants.)

**New Vocabulary** – *VERY IMPORTANT!*

* **GENES** - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* **ALLELES** - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(the TALL and SHORT alleles are the 2 forms of the HEIGHT gene in peas).

* **DOMINANT ALLELE** – is one whose trait \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the other form of the trait.

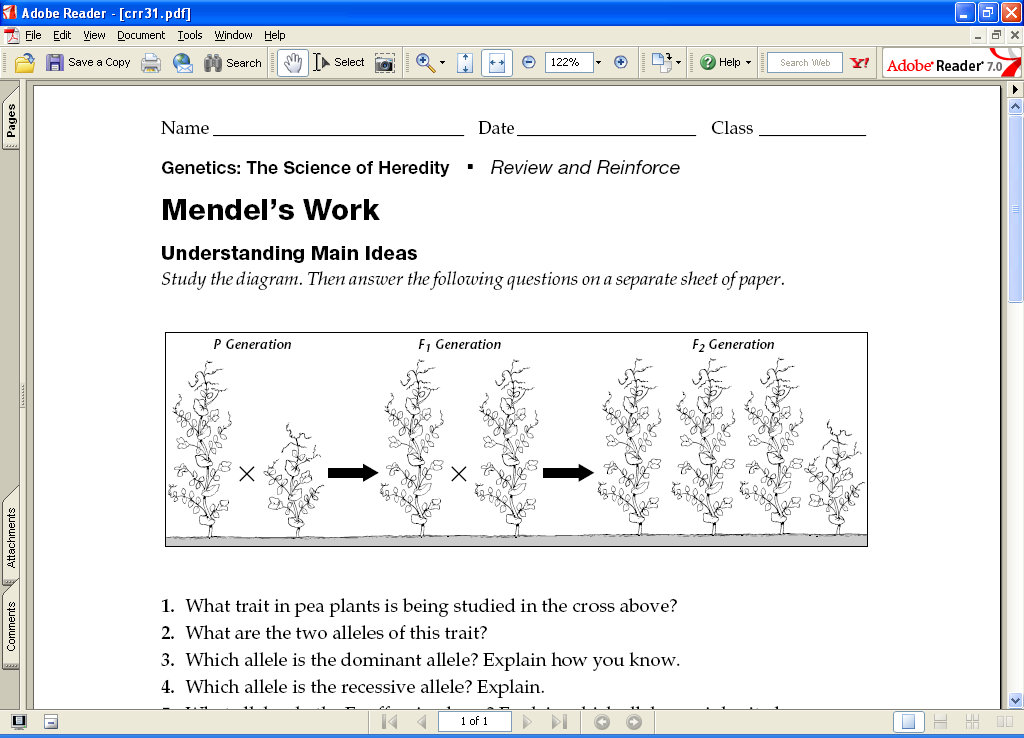
* It is shown with an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ letter, for example “\_\_\_\_\_\_”.
* **RECESSIVE ALLELE** – is one whose trait \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It will only show up if \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* It is shown with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ letter, for example “\_\_\_\_\_\_”.
* **HOMOZYGOUS** - Organisms with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (example - TT tt)
* **HETEROZYGOUS** - Organisms with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (example - Tt)

**Let’s Review…**

- When you cross a tall plant and a short plant, all the offspring get a dominant allele (T) from 1 parent; and a recessive allele (t) from the other parent.



**Tt**

**TT**

**tt**

**TT**

**tt**

**Tt**

**Tt**

**Tt**

- In the first generation, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ allele hides the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ allele,

so ALL the offspring are \_\_\_\_\_\_\_\_\_\_\_\_\_. They are all \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

- In the second generation, the heterozygous plants cross and it’s possible to have a plant with

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. With 2 recessive alleles, the plant will be \_\_\_\_\_\_\_\_\_\_\_\_\_.

**\*SUMMARY:** When studying genetics, we need to take 2 things into account:

* **PHENOTYPE**: An organism’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* **GENOTYPE**: An organism’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.