**Mendel’s Work**

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| **Genetics** | The scientific study of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Heredity** | The passing of physical \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from \_\_\_\_\_\_\_\_\_\_ to offspring |
| **Trait** | The different forms of a characteristic. For example: eye color (blue, green, brown) |
| **Gregor Mendel** | Known as the “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Mendel worked with pea plants to determine how traits are passed from generation to generation. |
| **Mendel’s Experiments** | Mendel fertilized pea plants by cross-pollinating flowers of purebred pea plants.  **Pollination**: the \_\_\_\_\_\_\_\_\_\_\_\_ of pollen from the pistil of a flower to the stamen of another flower.  **Pistil:** plant structure that produces the female gamete of a flower (egg)  **Stamen:** plant structure that produces the male gamete of a flower (sperm) |
| **Purebred** | The offspring of many generations with the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Example: Short parents always produce short offspring.  Example: Blue-eyes parents always produce blue-eyed offspring |
| **P-Generation & F-Generations** | Mendel’s initial plants, or parent plants, are called the \_\_\_\_\_\_\_\_\_ generation.  The plants produced from the seeds of the P-generation are called the 1st \_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_ generation (children)  The plants produced from the \_\_\_\_\_\_\_\_\_\_ generation are called the 2nd \_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_ generation (grand-children) |
| **Mendel’s Conclusions** | 1. Mendel believed that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. The factors that control traits exists in pairs 2. Each parent (mother and father) contributes 1 of the factors 3. One factor in the pair can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   **Gene:**  Example: eye color, height, nose  **Allele:**  Example: brown eyes, blue eyes, green eyes |
| **Dominant Allele** | The form of the gene that will \_\_\_\_\_\_\_\_\_\_\_\_ show up in an organism if present and working correctly.  Represented by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Example: Seed shape (round) (R) |
| **Recessive Allele** | The form of the gene that will only show up if the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ allele is not present or working correctly.  Represented by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Example: Seed shape (wrinkled) (r) |
| **Hybrid vs. Purebred** | A hybrid is an organism that has 2 different alleles for a particular trait.  Example: Stem height—Tt  Example: Seed color—Yy  A purebred is an organism that has 2 of the same alleles for a particular trait.  Example: Stem height—TT or tt  Example: Seed color—YY or yy |
| **Heterozygous & Homozygous** | Heterozygous:  Homozygous:  Genotype: |

**Writing Alleles Practice**

**Using the chart below, write the genotype.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Dominant Allele | Symbol | Recessive Allele | Symbol |
| Seed Shape | Round | R | Wrinkled | r |
| Seed Color | Yellow | Y | Green | y |
| Seed Coat Color | Colored | C | White | c |

1. Heterozygous for seed color: \_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Homozygous for recessive seed shape: \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Homozygous for dominant seed coat color: \_\_\_\_\_\_\_\_\_\_
4. Heterozygous for seed shape: \_\_\_\_\_\_\_\_\_\_\_\_\_