

## Four Genetic Traits in Corn Worksheet

**Table 1: Genotype**

### Ovule Genetic Traits



| Height      | Leaf Color              | Seed color           | Seed texture           |
|-------------|-------------------------|----------------------|------------------------|
| Tall stalk  | Green leaves            | Yellow seed (kernel) | Smooth seed (kernel)   |
| Short stalk | White leaves (albinism) | White seed (kernel)  | Wrinkled seed (kernel) |

**Table 2: Genotype**

### Pollen Genetic Traits



| Height      | Leaf Color              | Seed color           | Seed texture           |
|-------------|-------------------------|----------------------|------------------------|
| Tall stalk  | Green leaves            | Yellow seed (kernel) | Smooth seed (kernel)   |
| Short stalk | White leaves (albinism) | White seed (kernel)  | Wrinkled seed (kernel) |

**Table 3: Phenotype**

### New Corn Plant (Offspring) Appearance



| Height      | Leaf Color              | Seed color           | Seed texture           |
|-------------|-------------------------|----------------------|------------------------|
| Tall stalk  | Green leaves            | Yellow seed (kernel) | Smooth seed (kernel)   |
| Short stalk | White leaves (albinism) | White seed (kernel)  | Wrinkled seed (kernel) |

### Check for Understanding

1. What do the paper clips in the activity represent?
2. What are the male and female reproductive structures of a corn plant?  
Male: \_\_\_\_\_ Female: \_\_\_\_\_
3. What dominant trait(s), if any, will you see in the new corn plant? Use your phenotype card and Table 3 for guidance.
4. What recessive trait(s), if any, will you see in the new corn plant? Use your phenotype card and Table 3 for guidance.
5. What dominant trait(s), if any, will you find in your new corn plant's DNA? Use Tables 1 and 2 for guidance.
6. What recessive trait(s), if any, will you find in your new corn plant's DNA? Use Tables 1 and 2 for guidance.

### Think About It

|              | Dominant traits                         | Recessive traits                               |
|--------------|---|--|
| Height       | Jumbo purple paper clip =<br>Tall stalk | Regular purple paper clip =<br>Short stalk     |
| Leaf color   | Green paper clip =<br>Green leaves      | Silver paper clip =<br>White leaves (albinism) |
| Seed color   | Yellow paper clip =<br>Yellow seed      | White paper clip =<br>White seed               |
| Seed texture | Red paper clip =<br>Smooth seed         | Twisted red paper clip =<br>Wrinkled seed      |
| $D + D = D$  | $D + R = D$                             | $R + D = D$                                    |
|              |   | $R + R = R$                                    |

1. A group's trait chain contains a jumbo purple, green, white, and twisted red clip. Could a corn plant with this genotype ever produce offspring that has short stalks? Why or why not?
2. Could a corn plant with this genotype ever produce offspring that will grow ears with white kernels? Why or why not?
3. What is meant by the phrase, "The genotype drives the phenotype."?