



Hands-On Activity

Determining a Genotype

FIGURE 10: Peaches and nectarines are the same species, *Prunus persica*.



MATERIALS

- paper
- pencil

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Peaches have fuzzy skin. A nectarine is a variety of smooth-skinned peach. A dominant allele, *G*, causes fuzzy skin. All peaches have at least one copy of this allele. Nectarines come from trees that are homozygous recessive (*gg*) for fuzz.

Imagine your company sells peach and nectarine seedlings. You developed a new type of peach tree that is very popular. To meet demand, you must learn the genotypes of your breeding stock. You determine them by setting up a **testcross** between an individual that has a dominant phenotype but an unknown genotype and an individual that is homozygous recessive.



Predict How can a testcross help you find the unknown genotype of the plant?

PROCEDURE

1. Plant A produces peaches. You need to determine its genotype. Plant B produces nectarines that have smooth skin and a known genotype of *gg*. You cross Plant A with Plant B.
3. The resulting cross yields twelve plants. Six plants produce peaches upon the first fruiting and six plants produce nectarines upon the first fruiting.
4. Use Punnett squares to determine the genotype of Plant A.

ANALYZE

Answer the following questions in your Evidence Notebook:

1. What is the genotype of Plant A? Explain how you arrived at your answer.
2. Plant A is crossed with a plant that has a genotype of *GG*. What are the possible genotypes and phenotypes of the offspring?
3. Plant A is crossed with a plant that has a genotype of *Gg*. What is the ratio of dominant to recessive phenotypes of the offspring?
4. In terms of genotype, is Plant A the best plant to produce as many peach seedlings as possible? Why or why not? Which genotype would be best?