

WestFest

SCIENCE & SUSTAINABILITY

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The Pollination Game

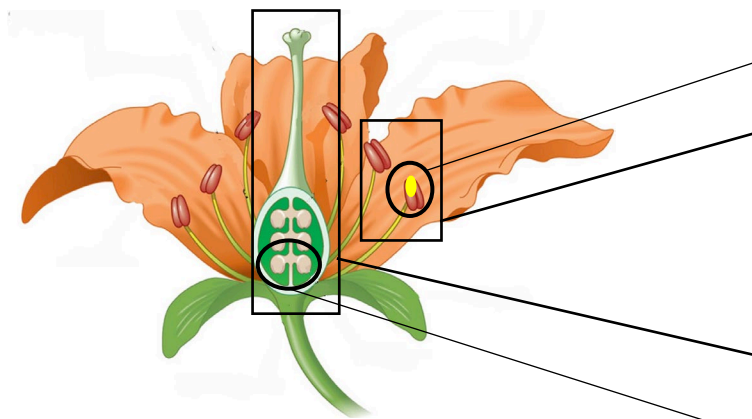
This activity was developed by the Dobritsa Lab, Dr. Anna Dobritsa, Associate Professor, Department of Molecular Genetics, The Ohio State University

Materials

Game board	Parent flower cards	Offspring flower cards
12 red pom poms	12 yellow pom poms	12 white pom poms

Pondering pollination

Most people know that plants come from seeds. But have you ever wondered where seeds come from? The answer is pollination. Before we can understand pollination, we need to know a little bit about the parts of a flower.



This is where **pollen** is made. The yellow oval represents a pollen grain.

Stamen – The male part of the flower that makes pollen.

Pistil – The female part of the flower that includes the ovules.

Ovules – They contain plant eggs

Pollination is the process of transferring pollen from the stamen (see flower image) to the pistil. Once the pollen makes it to the pistil, it grows a tube that travels down to the ovule where it connects with an egg. The fertilized egg develops into a seed. The seeds contain instructions from both the pollen and the egg. These instructions are made up of lots of bits of information (called genes) that determine what traits the seedling (or baby

plant) will have. Flower color is an example of a trait. In our activity, the seedlings will get one bit of information (gene) from the pollen and one bit of information from the egg. The combination of these genes decides the flower color for the seedlings.

Some genes are “stronger” than others. In this game, red and yellow genes are stronger. White genes are weaker. That means that if a plant has one red gene and one white gene the flowers will be red. Only if the plant has two white genes will the flowers be white. If the plant has a red and a yellow gene the resulting flower color will be orange.

Some plants are cross pollinated, which means that pollen from one flower pollinates the eggs of a different flower. Bees, butterflies, and other pollinators help to move the pollen between flowers. Other plants are self-pollinated, which means that the eggs of a flower are pollinated by its own pollen.

Vocabulary

Cross pollinated – This means that the pollen from one flower pollinates the eggs of a different flower

Gene – Small bits of information that make up the instructions that tell living things how to grow and how to look

Ovule – The female part containing the egg. Ovules with fertilized eggs develop into seeds containing baby plants.

Pistil – The female part of a flower that includes ovules

Pollen – Small grains that are made by the male flower parts

Pollination – The process of moving pollen from the male parts of a flower to the female parts of a flower

Pollinator – An animal that helps to move pollen between flowers

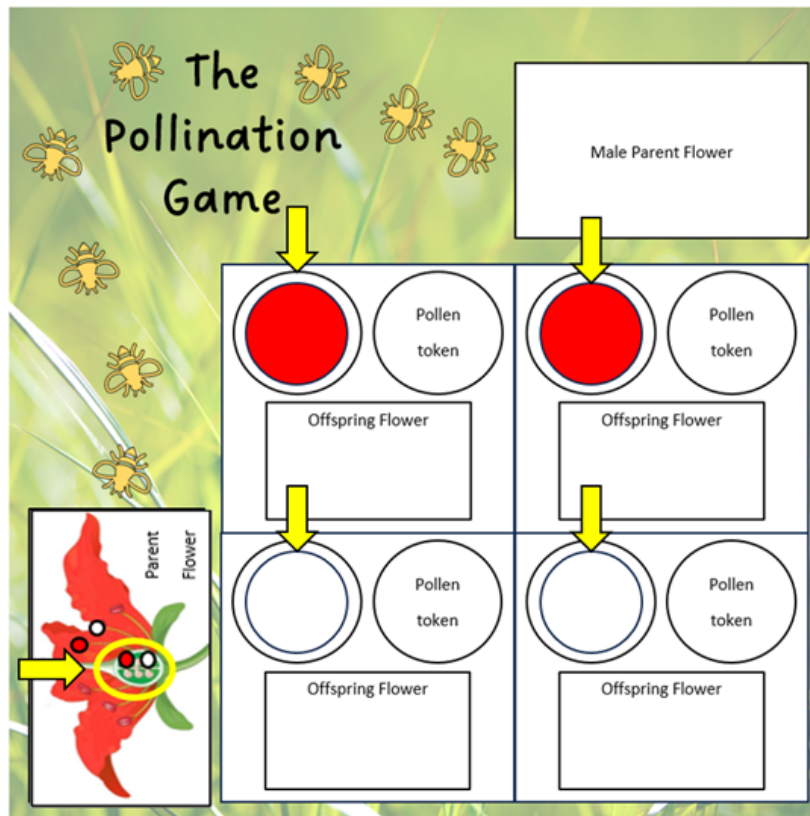
Seedling – A baby plant

Self-pollinated – This means that the eggs of a flower are pollinated by its own pollen

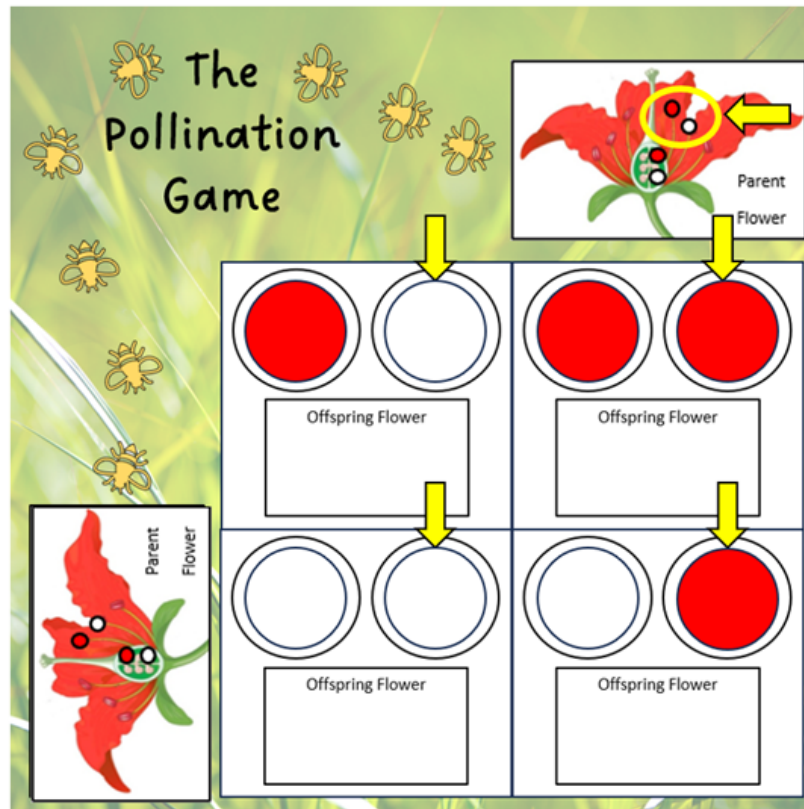
Stamen – The male part of a flower that make pollen

How to play

1. Print and cut out one set of Parent Flower Cards and one set of Offspring Flower Cards.
2. Print one game board.
3. Stack the Parent Flower Cards face-down and shuffle the stack.
4. Place one Parent Flower Card face-up in the Female Parent Flower box on the game board.
5. Look at the color of your female parent flower's eggs and place matching tokens in the egg boxes on the game board.
 - a. Example: This plant can make both red and white eggs. Place red tokens in the two egg boxes in the top row, and white tokens in the two egg boxes in the bottom row.



6. Place a second Parent Flower Card face-up in the Male Parent Flower box on the game board.
7. Look at the color of your male parent plant's pollen and place matching tokens in the pollen boxes on the game board.
 - a. Example: This plant can make both white and red pollen. Place white tokens in the two pollen boxes in the left column, and red tokens in the two pollen boxes in the right column.



8. Look at the four possible egg and pollen combinations in each of the offspring flower boxes. Use what you learned in the *Learn about Pollination* section to determine the color of flowers in each of the four offspring plants. Fill each Offspring Flower Card box with the matching flower card.

What colors would the flowers in the offspring plants have? How many plants would have each color?
9. Try other combinations of Male and Female Parent Flowers to see what colors their offspring can develop.