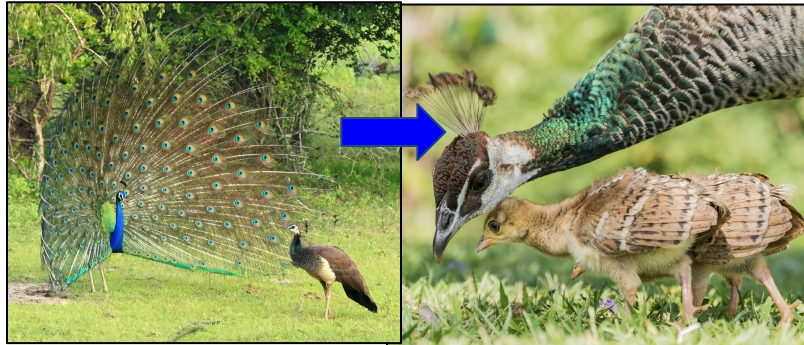


Reproduction in Plants and Animals

Reflect

Do you see the male peacock showing off his beautiful feathers to the female? If he is successful in attracting the female, the two birds can mate and produce baby peacocks. **Reproduction** of offspring is not a guarantee in the animal world. What is the probability that the two birds will mate or that future eggs or chicks will survive? Certain animal behaviors affect that probability.



reproduction – a process by which an organism produces offspring, or young



Reproduction produces offspring.

Reproduction is a process by which an organism produces offspring, or young. All organisms reproduce. If they didn't, no species would survive past a single generation. Reproduction allows organisms to pass their traits, or characteristics, to their offspring. Parents pass on their traits through their genetic material, or DNA. These puppies are a product of sexual reproduction.

Sexual reproduction requires two parents.

Sexual reproduction requires a male and female. Each parent contributes half their genetic material, or DNA, to the offspring. The female contributes her DNA in an egg cell. The male contributes his DNA in a sperm cell. When the egg and sperm combine, they form the new offspring.



Behavior affects probability of reproduction.

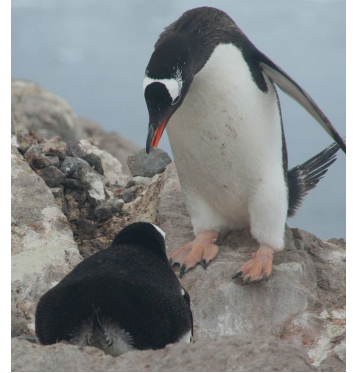
Animals have adapted a variety of courtship and mating behaviors to increase the probability of finding a mate. For example, the males of many bird species gyrate their feathers or perform special dances to attract a female. Vocalization is common to call attention to the male, such as birds singing songs or frogs croaking.



Reproduction in Plants and Animals

Look Out!

Not all mating and courtship behavior are successful. The males of the Adélie and Gentoo species of penguins in Antarctica offer nest rocks to entice the female to mate. If she accepts the rock, then the probability of mating is increased. However, she may also ignore his offer, and then the suitor must go to another nest in search of a willing female. These penguins build nests out of rocks to elevate their eggs above the melting ice waters. Nest building protects the newborn and is another specialized behavior that increases the odds that offspring will survive.



Reflect



Because the function of reproduction is the continued success of a species, animals have adapted behaviors such as herding to guard their newborn and young. Most species have predators that hunt vulnerable offspring for food. Examples of animals that herd their young during danger are dolphins, bison, and elephants. Pictured on the left are musk oxen, which form a defensive circle around the younger members of the herd.

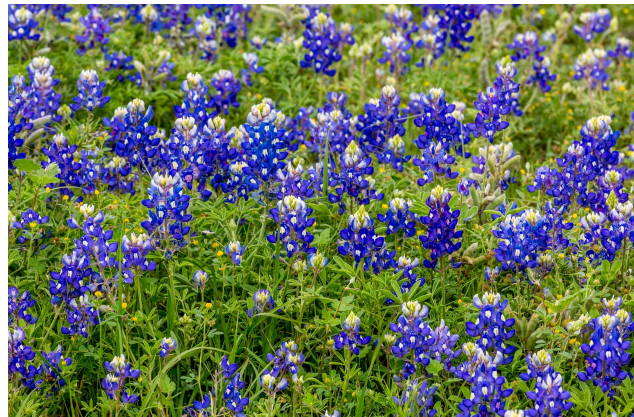
What Do You Think?

What do you think plants have to increase their reproductive success? Plants have adapted special structures to increase the probability that reproduction will be more successful. The first key to plant reproduction is the **fertilization** of their seeds. Next, plants must find ways to disperse seeds so that they will more likely germinate (sprout) and grow. To understand this process, let's look at the reproductive structures in plants.

fertilization – occurs when the male and female sex cells unite to form a seed

The process of reproduction in a flowering plant takes place in the flower. A flowering plant produces seeds through the process of sexual reproduction. The flower serves as the plant's reproductive center. The flower's color and shape attract insects that aid in **pollination**.

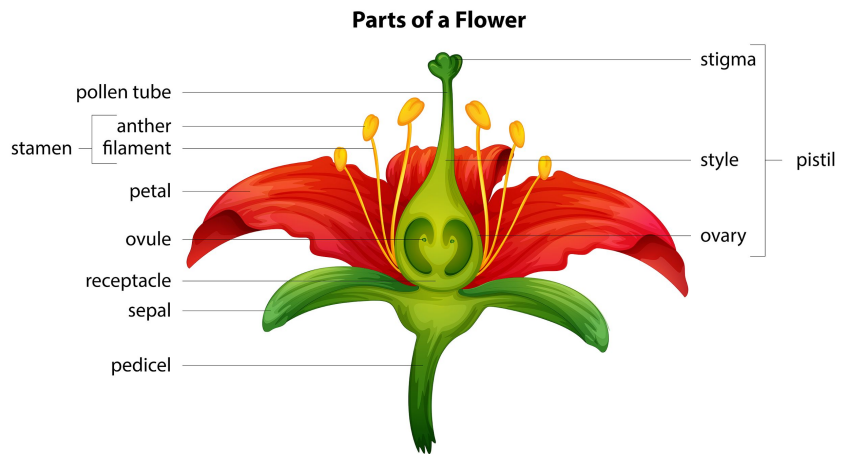
pollination – the process of fertilizing flowers by transferring pollen from the male parts to the female parts



Reflect

Specific structures in each plant play a part in plant sexual reproduction.

- *Petals* surround the plant's reproductive parts of the flower. Petals are usually a colorful structure arranged in a circle around the top of the stem.
- *Sepals* are modified leaves that encase a developing flower. Sepals are the sterile parts of the flower and are usually green or leaf like.
- The *stamen* is the male reproductive organ of a flower. The stamen consists of an anther and a stalk (filament). The anther is responsible for producing pollen that contains sperm cells.
- The *pistil* is the female reproductive organ of a flower. The pistil consists of an ovary, stigma, and style. The style is a stalk structure between the ovary and the stigma. The ovary is responsible for producing the egg cells. The stigma has an adhesive area that allows the pollen from the stamen to stick to the pistil.



Seed dispersal



After fertilization, seeds must be dispersed. If seeds take root and grow too close to the parent plant, the offspring will compete with the parent for resources. Therefore, plants have evolved ways of spreading seeds over larger areas to minimize competition between parents and offspring.



Wind is one method of seed dispersal, such as when dandelion seeds are blown away to a different location, take root, and grow into another dandelion plant. Another method of seed dispersal is water, such as when the seeds of mangrove trees fall into the water and carried away from the parent plant.

Some plants have evolved to use animals as a method of seed dispersal such as seeds getting caught in an animal's fur, or being eaten by the animal and later released in the animal's scat.

Reproduction in Plants and Animals

Asexual Reproduction

Eukaryotic organisms reproduce asexually in several ways. Fungi such as mushrooms form spores. *Spores* are tiny reproductive structures that contain a copy of the parent DNA and are agents of asexual reproduction. Some organisms reproduce by *budding*. In budding, a smaller version of the parent organism grows out of the parent. Eventually, it separates from the parent and begins to function on its own. This would be similar to another person growing out of your body! The hydra shown on the right are tiny aquatic animals. The hydra is reproducing by budding. The offspring is growing out of the parent hydra toward the front of the image.



eukaryotic – describes an organism that has cells with a nucleus and other membrane-bound organelles



The sprouting buds of this red potato are an example of vegetative propagation.

Asexual Reproduction in Plants

Plants can reproduce asexually through a process called *vegetative propagation*. An entire new plant can grow out of a portion of the plant. For example, if you were to remove a part of the stem and leaf and put it in water, it would form roots and grow to be an adult plant. It would be an exact genetic copy of its parents. Have you ever noticed the “eyes” of potatoes? The eyes are actually buds that sprout new, leafy branches. This is an example of asexual reproduction. If you were to plant the sprouting parts, they would eventually grow into adult potato plants.

Look Out!

Bacteria, fungi, and nonflowering plants are not the only organisms that reproduce asexually. In some animals, such as fish, reptiles, and amphibians, an unfertilized egg can develop into a full-grown adult. This offspring would only have a copy of the female’s DNA.

For example, in some insects called aphids, asexual reproduction can occur when an unfertilized egg develops inside the female. Once the egg has fully developed, the female gives birth to a genetically identical offspring!



Reproduction in Plants and Animals

Try Now

Use what you know about asexual and sexual reproduction to sort the terms below into the correct column. If the term is related to asexual reproduction, write it in the column on the left. If the term is related to sexual reproduction, write it in the column on the right. If the term is related to both types of reproduction, write it in both columns.

Terms: DNA, male and female, one parent, unique, spores, uniform, traits, egg, and sperm

Asexual Reproduction	Sexual Reproduction

Look at the picture of a flowering plant. Identify which parts are the male structures and which are the female structures.

