



A close-up photograph of a honeybee on a purple flower. The bee is positioned on the right side of the frame, facing left towards the flower. The flower is a cluster of small, tubular purple blossoms on a green stem. The background is a soft, out-of-focus purple, suggesting a field of similar flowers. The overall lighting is natural and soft.

# POLLINATION IN FLOWERING PLANTS

STEMTaught® Next Generation Science

## The Parts of a Flower Pollination in Flowering Plants



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Earth Scientist, STEMTaught

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### Message from the Author

I think kids are the best scientists in the world. You are so inquisitive and curious about the world. I can't wait to see what you become. If I had one piece of advice for you, I would say, be careful not to spend too much time on social media and video games, instead, get outside to play. Discover the world around you!

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# Pollination in Flowering Plants

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## Plants Are Amazing

What do the driest deserts, the most remote islands, and the harshest environments all have in common? Plants. Plants are everywhere we go, and they are amazing. We know that plants need seeds to grow, but how do plants make seeds? The way that flowering plants reproduce is very interesting.



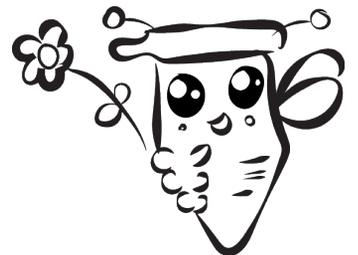
*Flowering plants can be big or small, and they can even be found in the arctic.*

## Flowering Plants Need Help to Reproduce

Flowering plants have different parts that work together to make baby seeds, but plants need a little help. Insects and animals help carry pollen from one flower to another. Pollen is necessary for plants to reproduce. Plants don't have arms or legs and so they can't do the pollinating by themselves, but they do have some very clever ways to get insects and animals to do it for them. Flowering plants use bright petals and delicious smells as a way of attracting insects and other animals. Then, unknowingly, in exchange for some yummy nectar, the plants and animals help carry pollen from one plant to another. Plants need pollen from other plants of the same species to reproduce.



*This ant is attracted to this flower because of its pollen and nectar. The ant will carry the flower's pollen to another flower as it continues its hunt for food. Draw some ants with pollen attached to their bodies climbing out of the flower.*



## Pollen Contains Genetic Information

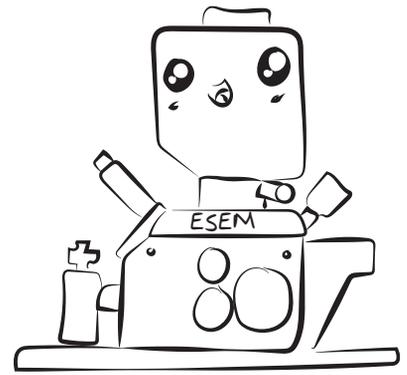
Although you do not look exactly like your parents, you inherit genetic traits from your parents like skin color, eye color, and hair color. You are born with genetic traits from both your mother and your father. Plants also make offspring that have a mix of genetic traits from two parents. **Pollen** is the microscopic structure that carries half of the genetic information needed to make a new plant. **Pollination** happens when plants share pollen with each other. Pollination allows plants to reproduce. Genetic traits are then shared with offspring. Pollen can come in many beautiful shapes and colors. Pollen grains have a tough protective shell to protect the delicate genetic information they hold.



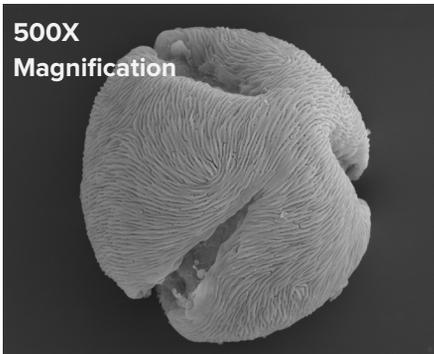
*You can look through Meeka microscope to see thousands of tiny pollen grains on a flower. Pollen comes in many shapes and sizes.*

## Pollen Can Stick to Insects and Animals

When you get your microscopes out to look at flowers, make sure that you find the pollen grains. Under your microscope, the pollen will look like tiny, colored spheres. Remember, inside each of those little dots are cells that contain half of the plant's genetic information that is needed to reproduce. With an even higher powered microscope called a Scanning Electron Microscope, you can see the pollen in more detail. Pollen is commonly covered with hooks and spikes that help it cling to the hair of insects and animals. No wonder pollen makes us sneeze when it goes up our noses! All those little spikes increase the chance that the pollen will stick to the bug that will take it to another flower.

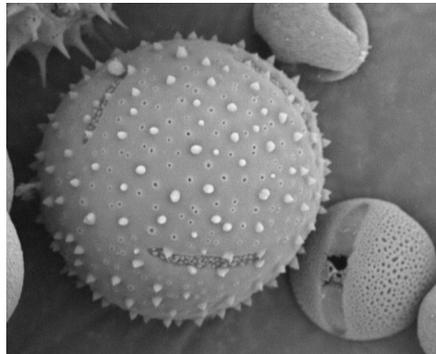


*Hi, I'm a scanning electron microscope, the most powerful microscope in the world. I took these pictures of pollen grains at 500X magnification!*

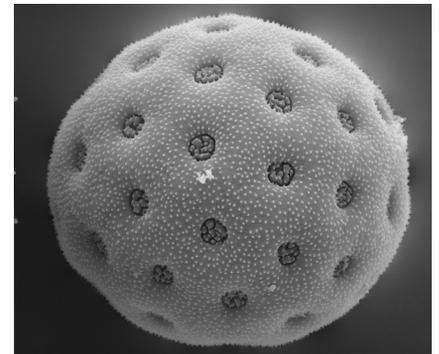


**500X  
Magnification**

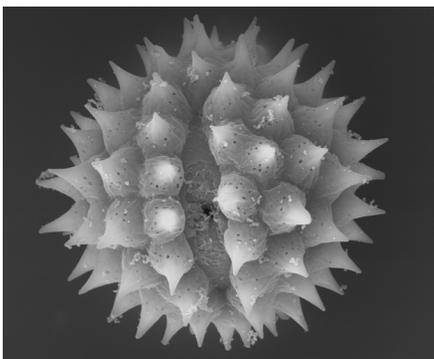
*Rose pollen*



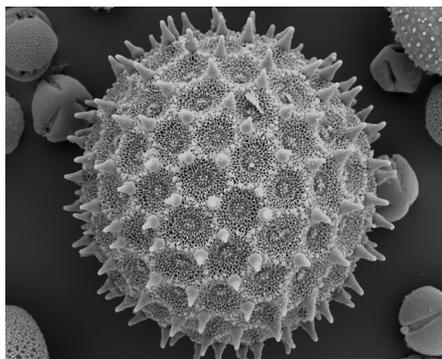
*Hollyhock pollen*



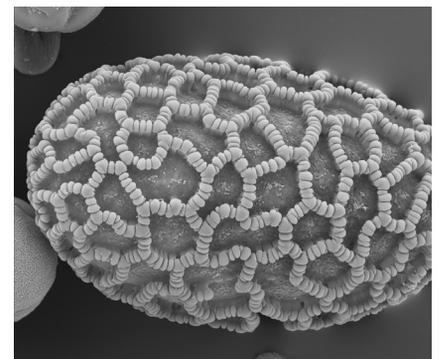
*Amaranth pollen*



*Ragweed pollen*



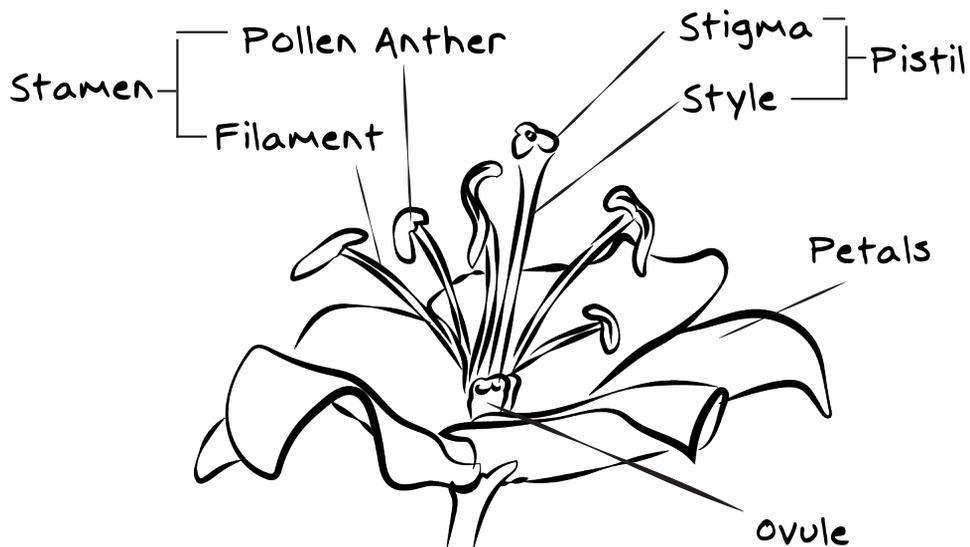
*Morning Glory pollen*



*Lily pollen*

## Pollination Allows Plants to Reproduce

The parts of a flower are perfectly adapted for reproduction through pollination. All living organisms need to **reproduce** by having offspring so that their species can live on. All of the parts of a flower work together to accomplish this one important task. The pollen only contains half of the genetic information needed to make offspring, and it is the ovule, or egg, that contains the other half. For pollination to successfully occur, a tiny piece of pollen must be transported from one flower to another, and then it must travel into and down the pistil of another flower. That tiny pollen grain can then fertilize the ovule so that it can develop into a seed. **Fertilization** occurs when the pollen grain and the ovule come in contact and fuse with each other to mix their genetic material. Without fertilization from a grain of pollen, an ovule will never develop into a seed.



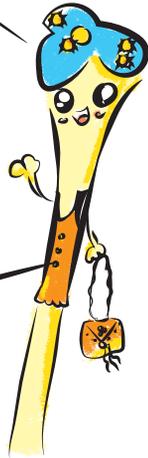
Compare the flower photo to the diagram. Color the flower parts on the diagram when you identify that part on the flower photo.

# Meet the Parts of a Flower

Take a closer look at the parts that make up a flower. There are more parts than you may think.

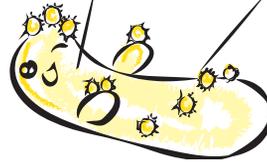
## Stigma

Hi, I'm really sticky and that makes it easy to remember my name, Stigma. My job is to catch the pollen that comes riding in on insects.



## Anther

I make pollen. I make lots and lots of it. My friends watch and say, "Hey, there's a pollen, and there's another!" You can remember my name because "anther" sounds like "another."

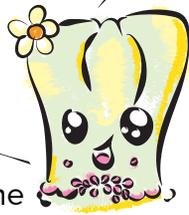


## Pollen

Don't forget us, we're small. Pollen is our name and protecting is our game. We hold the plant's genetic information safe inside a protective shell.

## Style

I am a long, thin, and slender. I live in style! In fact, my name is Style. I act as a slide to help pollen get down to the ovule in order to make a seed.



## Ovary

I hold the undeveloped seeds called ovules. Once the pollen combines with the ovules, I can make a seed. In some plants, I grow and transform into a yummy fruit to hold my seeds.

## Filament

I'm thin but I can do some heavy lifting. I hold up the pollen anther.



## Ovules

We're shaped like the letter "o" like our name, ovules. We are tiny little developing seeds, but we are not yet seeds. We become seeds once we are fertilized through pollination.

