

For Creative Minds

This For Creative Minds educational section contains activities to engage children in learning while making it fun at the same time. The activities build on the underlying subjects introduced in the story. While older children may be able to do these activities on their own, we encourage adults to work with the young children in their lives. Even if the adults have long forgotten or never learned this information, they can still work through the activities and be experts in their children's eyes! Exposure to these concepts at a young age helps to build a strong foundation for easier comprehension later in life. This section may be photocopied or printed from our website by the owner of this book for educational, non-commercial uses. Cross-curricular teaching activities for use at home or in the classroom, interactive quizzes, and more are available online. Go to www.ArbordalePublishing.com and click on the book's cover to explore all the links.

Ah—Achoo! Understanding Allergies

Our bodies have all kinds of systems to keep us healthy. We have systems to help us breathe, see, taste, and many more. The immune system's job is to protect the body from sickness and infections. When you have a fever, your immune system is fighting to rid your body of a sickness. You might think of your immune system as a superhero that lets good cells in but fights to keep bad ones away.

Sometimes the immune system gets confused and thinks that some cells are bad that really aren't. Some of these confusing cells, called allergens, come from pollen, bee venom, mold, or even animal fur.

When the superhero immune system tries to prevent these allergens from getting into your body, you might have an allergic reaction. Like a fever, that is just the immune system's way of protecting the body.

Sometimes the allergic reaction is like the super hero going on the offensive . . . the immune system tries to push the allergens out of the body. A runny nose, watering eyes, vomiting, sneezing and coughing are all ways that the immune system tries to push the allergens out of the body. These reactions can be annoying and you might not feel well, but they won't hurt you.

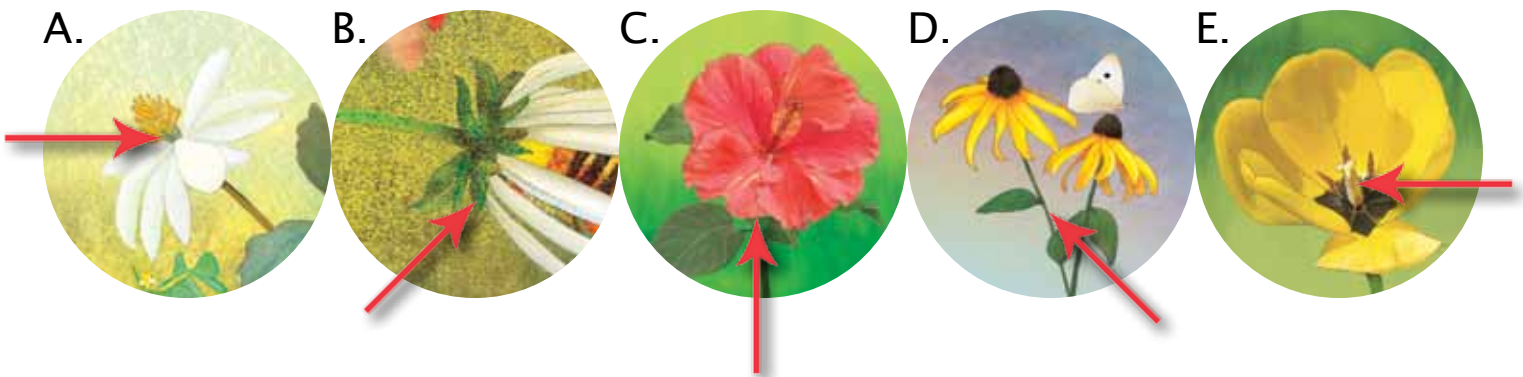
If the super hero immune system goes on the defensive, it might shut down your throat or airways to keep the allergens from getting into your lungs. While that might keep the cells out of your lungs, it can also keep you from breathing. If this happens, you need to get medical help immediately.



Flower Parts

Pollen comes from flowers and is part of the life cycle in flowering plants. Flowers have many different parts that work together to make seeds that will grow into new plants. Match the description of the flower part to the image below.

1. The **stem** supports the flower's weight and connects it to other parts of the plant.
2. At the base of the flower are **sepals**. The sepals look like small green petals. They protect the flower bud before it opens.
3. The **petals** are often bright and colorful to attract pollinating insects and other animals.
4. In the middle of the petals is a single, vase-shaped **pistil**. Inside the pistil are several ovules. After pollination, the ovules will grow into seeds.
5. The pistil is surrounded by long, thin reeds called **stamens**. The stamens make pollen.



Answers: 1-D, 2-B, 3-C, 4-E, 5-A

The Pollination Process

A flower produces pollen. Wind, water, or animals carry the pollen from one plant to another. If the pollen lands on a flower from the same species of plant, it joins with the ovule and becomes a seed.

The seed needs space to grow. Wind, water, or animals carry it to a new place. The seed plants its roots and begins to sprout as a seedling.

As the seedling grows, it becomes a mature plant. This plant will soon produce flowers of its own.



Pollinator Matching

A pollinator is an animal that helps spread pollen from flower to flower. Some animals only like certain types of flowers. Read about the pollinators below and match each animal on the left to the flower they prefer on the right. Answers are below.

1.



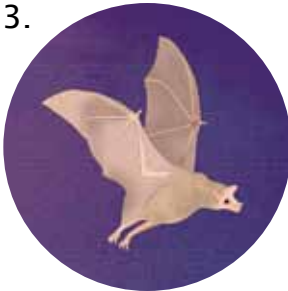
Hawk moths are most active at dawn and dusk (crepuscular). They like to drink from blue or purple flowers.

2.



Regal fritillary butterflies like flowers that grow in large clusters, giving them enough room to land. They prefer bright red, yellow, or orange flowers.

3.



Lesser long-nosed bats sleep in the day and are active at night (nocturnal). They prefer white or pale flowers that open at night and are easy to see in the moonlight.

4.



Ruby-throated hummingbirds flap their wings 40-80 times each second. This helps them hover in place over a flower. They use their long beaks to reach into deep, funnel-shaped flowers and drink the nectar.

5.



Soldier beetles are often found on yellow flowers. Yellow flowers are a source of food and a social meeting place for the beetles.

A. honeysuckle



B. saguaro cactus flower



C. goldenrod



D. morning glory



E. butterfly milkweed



Answers: 1-D, 2-E, 3-B, 4-A, 5-C.

Bees: The Great Pollinators

An ecosystem is made of all the living and nonliving things in an area. All of the things in an ecosystem are connected. Some species, called **keystone species**, play an important role in the life of the ecosystem. The keystone species helps other plants and animals live. If something happens to a keystone species, the whole ecosystem suffers. If the keystone species disappears, the ecosystem might even collapse.



Honeybees are a keystone species. When a honeybee lands on a flower, pollen sticks to her body. The bee carries this pollen to other flowers. By taking pollen from flower to flower, bees help the plants produce seeds. These seeds will grow into new plants. Honeybees pollinate more than 15% of all flowering plants. Without bees, these plants would have a hard time making seeds to grow new plants. Animals that eat plants (herbivores) and animals that eat both plants and animals (omnivores) depend on bees because they need new plants to eat. *Think about it:* If something harmed the bees, how would that affect the plants and animals that depend on bees?

People eat food from plants pollinated by bees. Bees help plants like almonds, apples, broccoli, carrots, chocolate, coffee, grapes, onions, peaches, tangerines, and tomatoes. Many people eat meat, and even our meat depends on bees. Cows, chickens, and other livestock eat plants so they can grow. Many of these plants are pollinated by bees. *Think about it:* If something harmed the bees, how would that affect people?

For the last ten years, many bees have been dying all around the world. In North America, a third of all honeybee colonies have disappeared. This is called Colony Collapse Disorder. Scientists are studying to find out why this is happening and how to stop it. For now, here are some things you can do to help honeybees:

1. Don't kill honeybees or hurt their hives. Most honeybees away from their hive will not sting unless you step on them or handle them roughly. Honeybees near the hive may sting if they think the hive is in danger.
2. Avoid putting pesticides or other chemicals on your lawn and in your garden.
3. Plant flowers! Find out what kinds of flowers grow best in your area. You can plant different kinds of flowers all year round. These flowers make nectar for honeybees to eat.
4. Bees need water to drink. Set up a small basin or birdbath filled with water. Place a few rocks in the basin so the bees have a dry place to land. This water will help bees and other thirsty animals.

