

BOTANY

3-8 Science Unit Study





BOTANY

CREATED BY THE GOOD AND THE BEAUTIFUL TEAM

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UNIT INFORMATION

Student Journal



All The Good and the Beautiful science units include activities in a student journal. Each student should have his or her own student journal, and the parent or teacher will direct the student regarding when to complete the activities in the lessons. Student journals can be purchased by going to goodandbeautiful.com/science and clicking on the *Botany* unit link.

Science Wall



All The Good and the Beautiful science units include vocabulary words to be placed on your science wall, which is a wall or tri-fold presentation board in your learning area on which you can attach the vocabulary words and other images. **Cut out the vocabulary word cards at the beginning of the unit.** The course will indicate when to place them on the wall.

Lesson Preparation



All The Good and the Beautiful science units include easy-to-follow lesson preparation directions at the beginning of each lesson.

Activities and Experiments



Many of The Good and the Beautiful science lessons involve hands-on activities and experiments. An adult should always closely supervise children as they participate in the activities and experiments to ensure they are following all necessary safety procedures.



Experiment Videos



Go to goodandbeautiful.com/sciencevideos and click on the *Botany* unit link or use the Good and Beautiful Homeschool app to see videos of experiments used in this unit. This is a convenient way to watch experiments that may be more complicated. Children often learn best through hands-on experience; therefore, this unit includes a

supply list and instructions for all experiments, and you may choose to do as many as you wish.

Unit Videos



Some lessons include videos that were created by The Good and the Beautiful. Have a device available that is capable of playing the videos from goodandbeautiful.com/sciencevideos or from the Good and Beautiful Homeschool app.

Optional Microscope Activities



This unit introduces the use of microscopes. In this unit there are several microscope activities, beginning with Lesson 5. The microscope greatly enhances the lessons, but if you do not have a microscope, this unit can still be completed by watching the microscope activity videos. Note: For help selecting and using your microscope, see “How to Use a Microscope” at goodandbeautiful.com/sciencevideos.

Content for Older Children



Some lessons include extra content that is more applicable for older children (grades 7–8). Parents or teachers may choose to skip this content if instructing only younger children.

Content for Younger Children



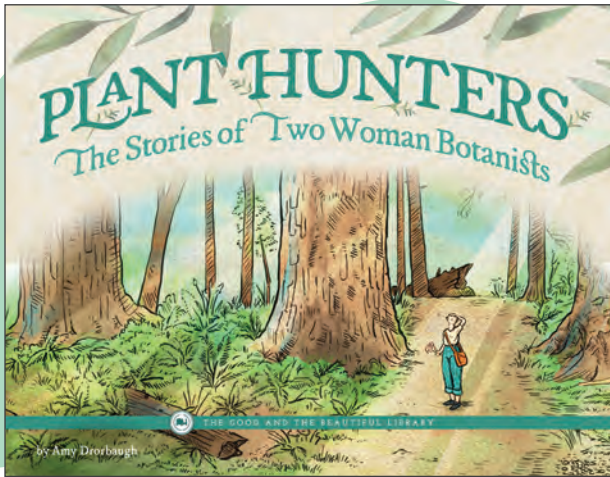
Some lessons include extra content that is more applicable for younger children (grades 3–6). Parents or teachers may choose to skip this content if instructing only older children.

Versions

New discoveries are being made on an ongoing basis. This course is reviewed and revised periodically to keep information as up to date as possible. This version is the second edition of this unit.

READ-ALOUD BOOK PACK

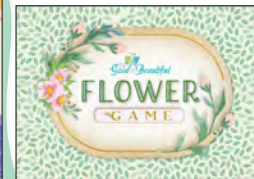
The books below are optional read-aloud books that complement this unit. These books can be purchased as a book pack by going to goodandbeautiful.com/science and clicking on the *Botany* unit link.



Plant Hunters—The Stories of Two Woman Botanists
By Amy Drorbaugh



Carl in the Garden
By Molly Sanchez



The Good and the Beautiful Flower Study Book & Game
By Maggie Felsch & Molly Sanchez

CORRELATED BOOKS

The Good and the Beautiful Library has several books that correlate well with the *Botany* unit. It can be a wonderful experience for children to read books at their levels that are related to the subjects they are learning. The library includes both fiction and nonfiction books organized according to reading level. Find the Correlated Books by going to goodandbeautiful.com and clicking on the *Botany* unit product page.



GRADES 7–8 LESSON EXTENSIONS

How the Extensions Work

Each lesson has an optional lesson extension for children in grades 7–8. Complete the lesson with all the children, and then have the older children complete the self-directed lesson extension. These extensions are located in the *Grades 7–8 Student Journal*.

Answer Key

The answer key for the lesson extensions can be found on the free Good and Beautiful Homeschool app in the science section. Visit goodandbeautiful.com/apps for information on accessing the app. The app can be accessed from a computer, phone, or tablet.

Flexibility

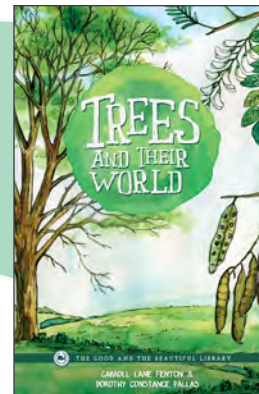
The amount of time it will take to complete each lesson extension will vary for each child. The average time is about 10–15 minutes per extension. Parents, teachers, and children may choose to omit parts of the lesson extension if desired. Encourage the children to stretch their capabilities, but also reduce work if needed.

Taking Notes

Some of the grades 7–8 lesson extensions have the children summarize the material read. Teach the children to look for key information, summarizing the most important points. Students can also add notes with their thoughts and the facts that are most interesting to them.

Optional Grades 7–8 Reading Book

We recommend *Trees and Their World* as extra reading for students in grades 7–8. This book can be purchased by going to goodandbeautiful.com/science and clicking on the *Botany* unit link.



Trees and Their World

By Carroll Lane Fenton & Dorothy Constance Pallas

SUPPLIES NEEDED



This section is divided into supplies needed for **activities** and supplies needed for **experiments**. If you would prefer to watch the experiments instead of perform them, you can watch all the experiments at goodandbeautiful.com/sciencevideos or on the Good and Beautiful Homeschool app. The activities, however, are not filmed.

Lesson 1

- None

Lesson 2

- Sandwich-sized zipper bag
- Paper towel
- Water
- 8 green bean or sunflower seeds
- Packaging tape
- 4 paper or plastic cups
- Potting media or soil
- Paper plate
- Stalk of celery with leaves
- Glass jar
- Water
- Red or blue food coloring

Lesson 3

- Live plant (see notes under the heading "Plant Parts Preparation")
- Newspaper (to keep area clean)
- 1 drinking straw per child
- 1 glass of water per child
- Celery stalk prepared in the previous lesson
- Knife
- 1 dried bean per child

Lesson 4

- Previously soaked bean for each child
- 1 unsoaked bean
- Magnifying glass (optional)
- Outside grass with dandelions (optional)

Lesson 5

- Glue stick for each child
- Colored pencils, crayons, or markers
- Variety of real flowers
- Microscope
- Glass slides
- Slide covers
- Distilled water
- Paper towel

Lesson 6

- Glue stick
- Flowers (picked live or from a bouquet) (optional)
- 1 blank piece of paper per child (optional)
- 2 pieces of cardboard 9"x6" in size (optional)
- 4 rubber bands (optional)
- Microwave oven (optional)
- Microwave-safe glass or ceramic bowl (optional)
- Small picture frame (optional)
- Laminator and laminating sheets (optional)

SUPPLIES NEEDED

(CONTINUED)



Lesson 7

- Access to real leaves and needles
- Bag for each child to gather leaves (optional)
- Permanent marker
- Blank piece of paper (optional)
- Crayons (optional)

Lesson 8

- Wide leaf on a live plant (wait to pick it)
- Clear tape
- Clear nail polish
- Microscope
- Glass slides
- Tweezers or forceps
- Colored pencils or crayons
- 3 colors of play dough
- Flower cards from Lesson 6

Lesson 9

- 1 LEGO® brick
- Small piece of lumber (any size)
- Scissors
- Glue
- Small piece of celery
- Glass slides
- Distilled water
- Slide covers
- Microscope
- Paper towel (optional)
- Fingernail clippers

Lesson 10

- 1 pair of scissors per child
- 1 glue stick per child

Lesson 11

- 3 dirt samples (obtained outside or from bags of potting soil) placed in large containers
- Flower cards from Lesson 6 (optional)

Lesson 12

- Glue stick
- Crayons (optional)
- 1 blank piece of paper per child (optional)
- Sap from a tree
- Resin from a pine tree
- Microscope
- 2 slide covers and slides
- Paper towel

Lesson 13

- None

VOCABULARY

Instructions: Cut out the vocabulary cards in this section. Place them on your science wall when prompted to do so in the lessons. Review the vocabulary words several times during this unit and, if desired, at various times throughout the school year.

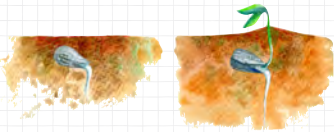
Botany

the study of plants, their structure, classification, and importance



Germination

the process of a seed becoming a plant



Cotyledon

the infant leaf within a seed in seed-bearing plants



Introduction to BOTANY

Objective

Help the children understand what botany is, what botanists do, and the majesty and importance of the creation of plants.



Preparation:

- ☐ Cut out the six quotes included in this lesson and place them around the room with the pictures visible.
- ☐ Cut out the numbered pictures (1 and 2) and remove picture (3) included in this lesson.

Activity Supplies:

- None



☐ Optional Read Aloud



At any point in the lesson, you may read one of the books from the optional Read-Aloud Book Pack. *Carl in the Garden* by Molly Sanchez is suggested with this lesson.

☐ Botany Quotes Activity



Have the children walk around and read the quotes that you placed around the room. (If the children cannot read, you may read the quotes aloud.) Have each child pick a quote and share why he or she likes it.

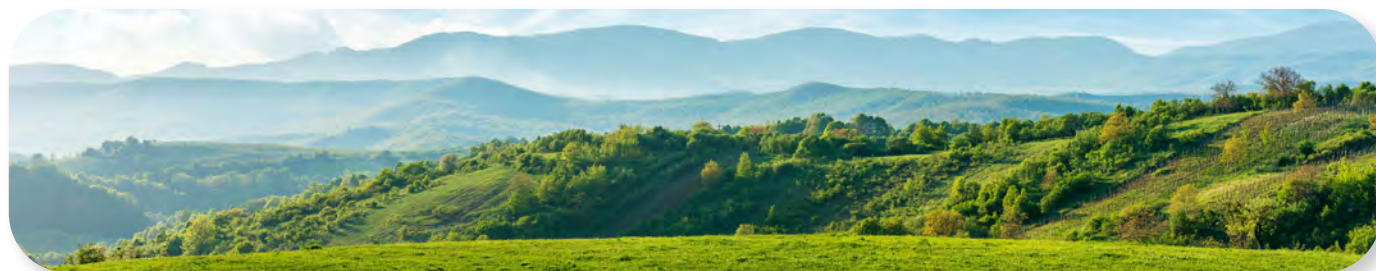
☐ The Study of Plants

Read to the children: Do you know what botany is? **Botany** is the study of plants. We get to spend this entire science unit discovering and learning all about the amazing plants that beautify the earth and provide the necessities of life for living things.

☐ Science Wall: Vocabulary Word



Place the vocabulary card **BOTANY** on your science wall. Read and discuss the word and its definition.



Picture Activity



Place the numbered pictures in front of the children. Read the following paragraphs one at a time and have a child point to the corresponding picture.

Read to the children: “In the beginning God created the heaven and the earth” (Genesis 1:1). On the first day, He created light and divided it from the darkness. On the second day, He created the firmament (the sky or atmosphere). And on the third day, God created the land and sea, along with all manner of plants. All other forms of life—fish and fowl, beasts and human beings—were still to come.

1. Plants are vital for life on the earth. They are beautifully designed by God to help give life to all other life forms. Nearly all living things depend on plants for food, including *carnivores*—animals that rely primarily on meat for their food—because plants are an integral part of sustaining life at some point in the food chain. Plants also provide shelter for many animals. Besides being a source of food and shelter, plants are also vital because they produce oxygen, a critical element for life.
2. Plants are different from other living organisms in a special way. While most life forms depend on other organisms for food and life, plants make their own food. The sequence and order of God’s creations are important and build upon each other. The creations that were prepared before plants were things needed for plants to survive—light, air, water, and earth. God created all things in His wisdom and order.
3. Plants provide humans with food, shelter, medicine, fuel, and clean air, among other things. Humans need to be good caretakers of the plants God has given us.



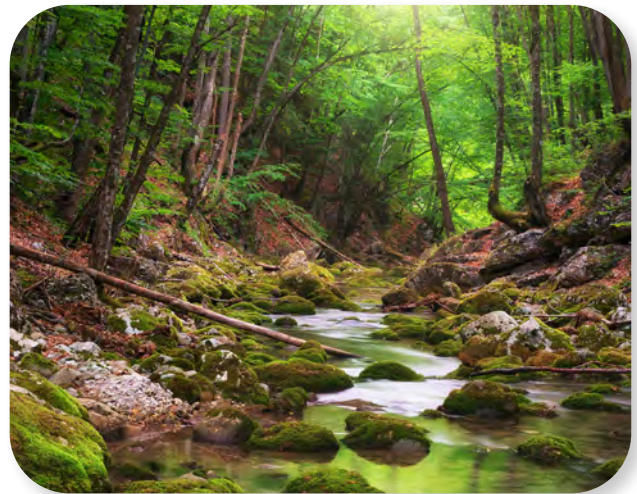
Nature Activity: Show and Tell



Have the children turn to the “Show and Tell” page in Lesson 1 of their student journals and take them to a cozy place to sit in nature. *Note: If the children are unable to go outside for this activity, have them imagine they are in the setting of the image below and complete the activity accordingly.*



Read to the children: Experiencing nature personally is one of the best ways to learn about and be inspired by the beauty of this earth that God has created for us. Spend a few minutes quietly listening to the sounds of nature.



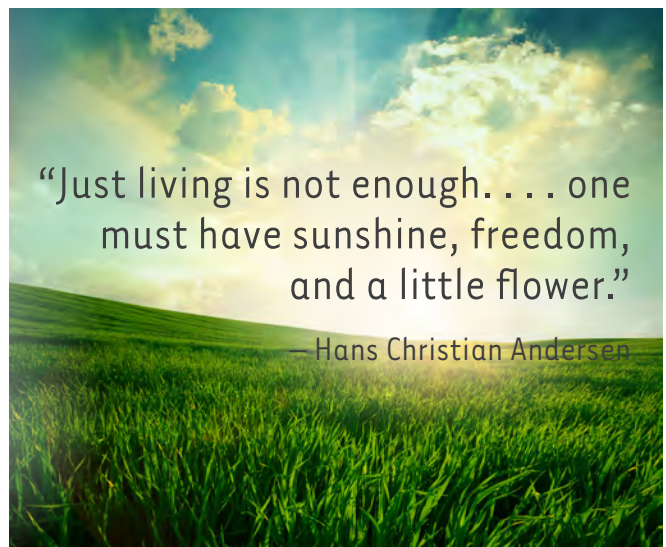
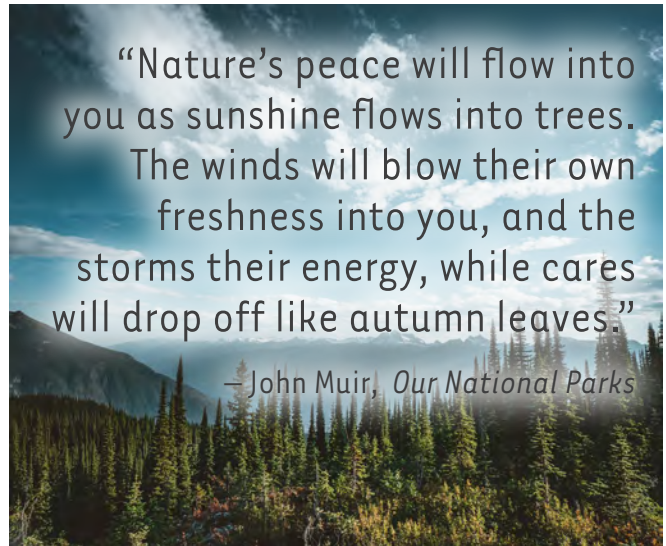
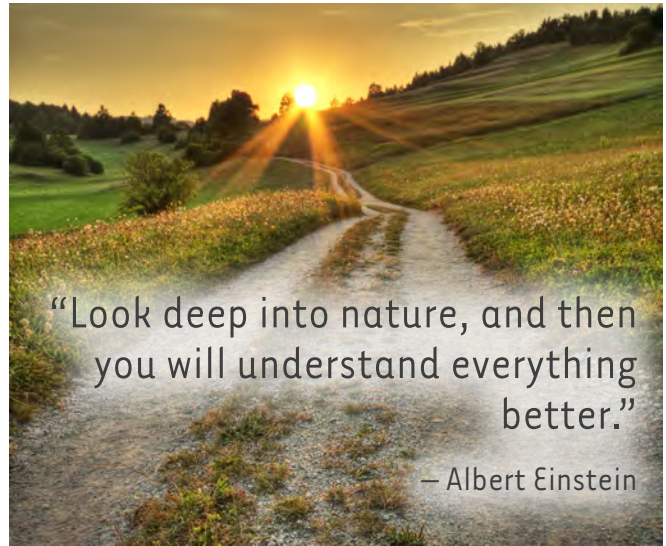
Walk around and smell, touch, and observe different things you find, such as soil, grass, leaves, flowers, or bark. Complete the sections under the words “hear,” “smell,” “feel,” and “see” as you discover each category around you. Choose one or two items that you can show and tell about. After 10–15 minutes, we will gather together, and you will show and tell about the nature item you found.

Lesson 1 Extension

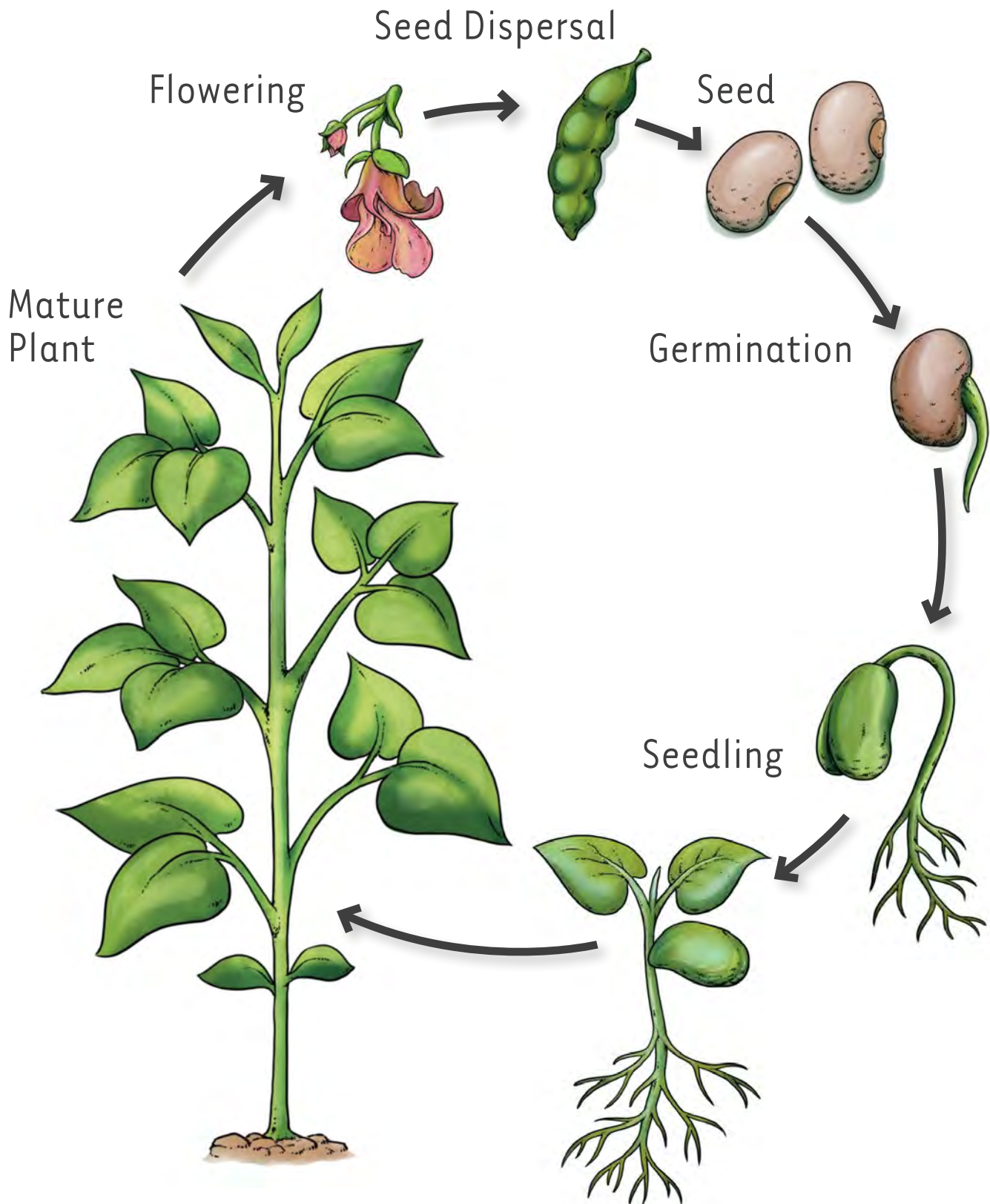


Have children grades 7–8 complete the self-directed Lesson 1 extension titled “Botanist: George Washington Carver” in their student journals.

Quotes



A Plant's Life Cycle



SEEDS

Objective

Help the children understand the parts of a seed, different types of seeds, and seed dispersal.



Preparation:

- ☐ For the experiment, place one dried lima bean (or other dried bean) per child in a cup of water overnight. This needs to be done 12–24 hours before the lesson.
- ☐ Cut out the “Seed Dispersal” pictures included in this lesson.

Experiment Supplies:

- Previously soaked bean for each child
- 1 unsoaked bean
- Magnifying glass (optional)
- Outside grass with dandelions (optional)

Plant Observation



Have the children observe the seeds they planted in Lesson 2. What happened to the seeds in the bag that were turned? Have the children turn to the “Plant Observation Log 2” page in Lesson 4 of their student journals and complete the observation section.



Complete the notes section if desired. The seeds planted in plastic bags may now be discarded. In all future lessons, the children will be observing only the growing seeds in the cups.

Read to the children: Seeds have an incredible way of using gravity to orient themselves and determine which direction is up or down. No matter which way a seed is turned, the gravitational pull will send the sprouts up and the roots down. **Children who completed the “Plant Movement” extension for grades 7–8 in Lesson 3 may be able to identify this as *geotropism*.**

Seed Dissection Experiment



Have the children turn to the “Seed Dissection” page in Lesson 4 of their



student journals. Have them draw a picture of what they think the seed will look like inside.

Have the children perform the experiment below or watch the video titled “Seed Dissection Experiment” at goodandbeautiful.com/sciencevideos or on the Good and Beautiful Homeschool app.

Read to the children: Every seed has within itself the beginnings of life. A bean is the seed of a bean plant. **Give each child a soaked bean that was previously prepared. Also have an unsoaked bean for the children to see.** What do you notice about these beans? [The soaked beans have swelled up with water.] What do you think the inside of the bean looks like?

Now rub the bean between your fingers to peel off the thin outer layer of the seed. This is called a seed coat. The seed coat protects the seed from physical damage. Find the



Angiosperms: Monocot vs. Dicot Chart

MONOCOT



One cotyledon



Several main roots



Scattered tubes



Parallel veins



Multiples of 3

DICOT



Two cotyledons



One main root



Ringed tubes



Branching veins



Multiples of 4 or 5

SEED

ROOT

STEM

LEAF

PETALS



Seed Dispersal



Gravity



Air



Water



Animals



Explosion

FLOWERS

Part 2

Objective

Help the children gain a greater appreciation for the beauty of flowers and identify different types of flowers.

Preparation:

- Cut out the two pages of “Flower Identification” cards included in this lesson.

Activity Supplies:

- Glue stick
- Flowers (picked live or from a bouquet) (optional)
- 1 blank piece of paper per child (optional)
- 2 pieces of cardboard 9"x6" in size (optional)
- 4 rubber bands (optional)
- Microwave oven (optional)
- Microwave-safe glass or ceramic bowl (optional)
- Small picture frame (optional)
- Laminator and laminating sheets (optional)



□ Optional Read Aloud



At any point in the lesson, you may read one of the books from the optional Read-Aloud Book Pack. *Plant Hunters—The Stories of Two Woman Botanists* by Amy Drorbaugh is suggested with this lesson.

□ Art Observation



Have the children turn to the painting by Armand Point called “La Joie des choses” in Lesson 6 of their student journals.

choses” in Lesson 6 of their student journals.

Read to the children: This artwork was painted by the French artist Armand Point. The title of this painting is “La Joie des choses” [pronounced “la zwa day shows”]. It is French for “the joy of things.” Why do you think the artist gave the painting this title? **Observe and discuss the painting.**



□ Flower Variety

Read to the children: How many varieties of flowers do you think there are in the world? There are more than 400,000 types of flowers in the world. If we were to observe 100 different types of flowers every single day of the week, we would have to continue for almost 11 years to observe them all. God certainly created a beautiful variety of flowers in our world.



□ Flower Identification Game



Read to the children: Let’s do an activity that explores some of the amazing flowers on Earth. **Place all the flower pictures and name cards on the table.** First, I am going

Flower Identification

Key



#1 ROSE



#2 VIOLET



#3 TULIP



#4 DAISY



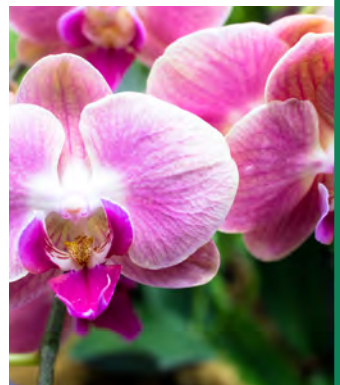
#5 CROCUS



#6 IRIS



#7 LILAC



#8 ORCHID



#9 LAVENDER



#10 DAFFODIL



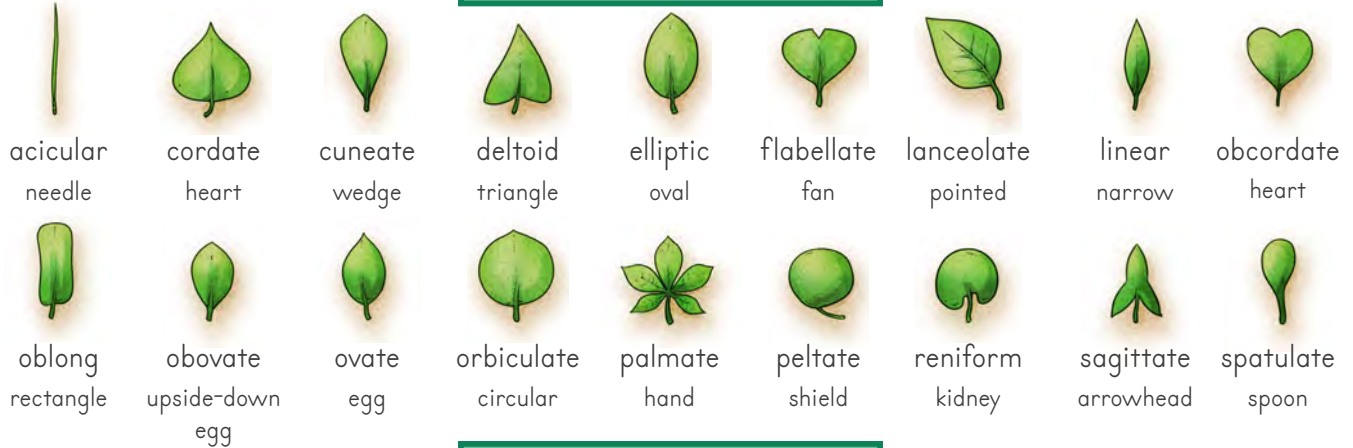
#11 HOLLYHOCK



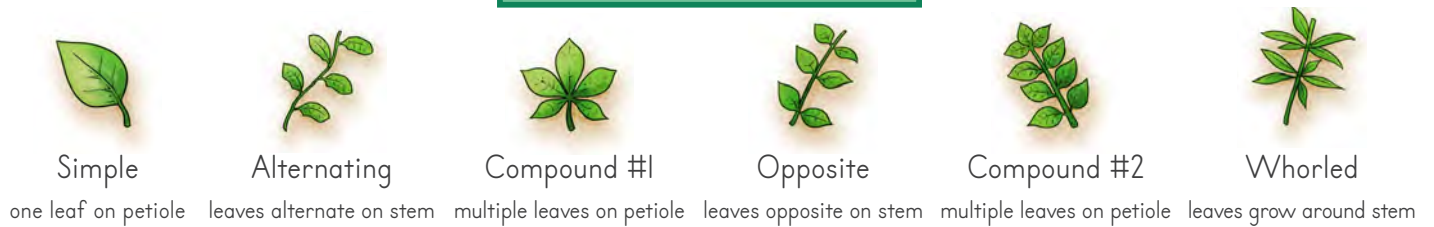
#12 LILY

Leaf Classification Chart

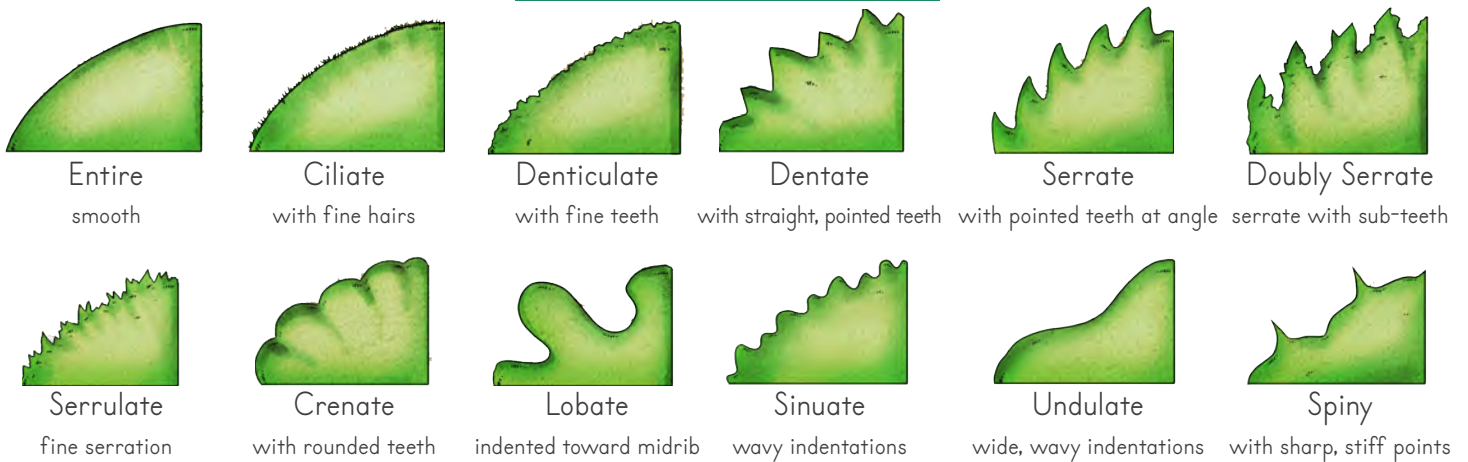
SHAPE



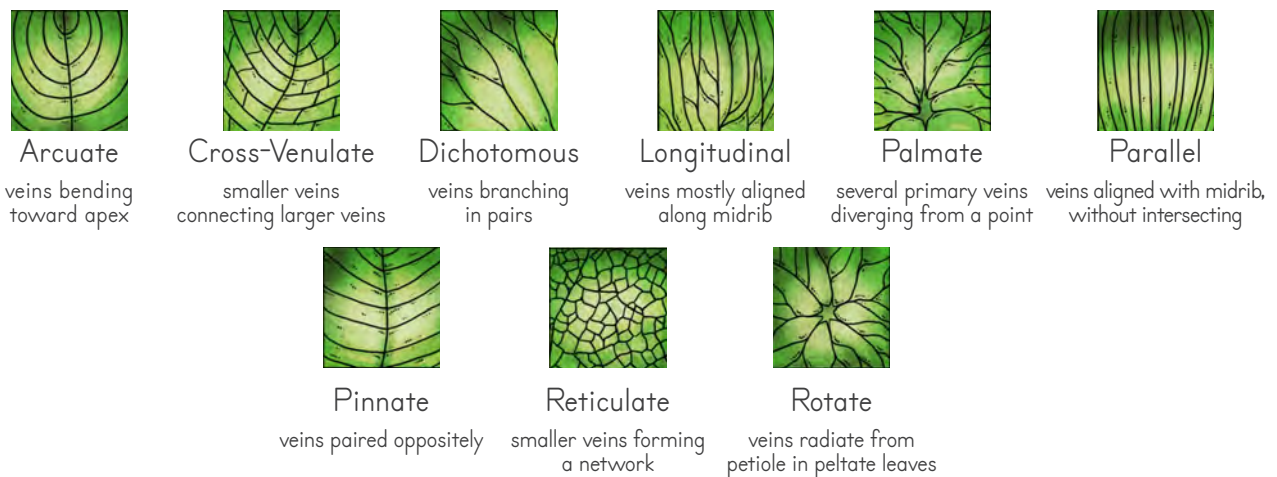
ARRANGEMENT



MARGIN (EDGES)



VENATION



PHOTOSYNTHESIS

Objective

Help the children understand what photosynthesis is and how the photosynthesis process works.



Preparation:

- ☐ Place the “Photosynthesis” page out where the children will see it.

Experiment Supplies:

- Wide leaf on a live plant (wait to pick it)
- Clear tape
- Clear nail polish
- Microscope
- Glass slides
- Tweezers or forceps

Activity Supplies:

- Colored pencils or crayons
- 3 colors of play dough
- Flower cards from Lesson 6

☐ Plant Observation



Have the children observe the seeds they planted in Lesson 2. Do you notice any differences between the plants that are receiving more or less sunlight or water?



Have the children turn to the “Plant Observation Log 6” page in Lesson 8 of their student journals and complete the page.

☐ The Sun Gives Life

Read to the children: What did our world already have when plants were created? [light, air, water, soil] Each of these things is important to give life to plants. The sun is an amazing source of light for the earth. What do you think of when you think of the sun?

Why is the sun so important for us? The sun gives us life on the earth and makes it possible for plants to grow. There is amazing symbolism between the life the sun gives the earth and the life the Son—the Son of God—gives us. **Discuss how the sun is like the Son of God.** God has provided us with witnesses of Him and His love

through His creations. As we observe nature, we will see God’s love all around us.



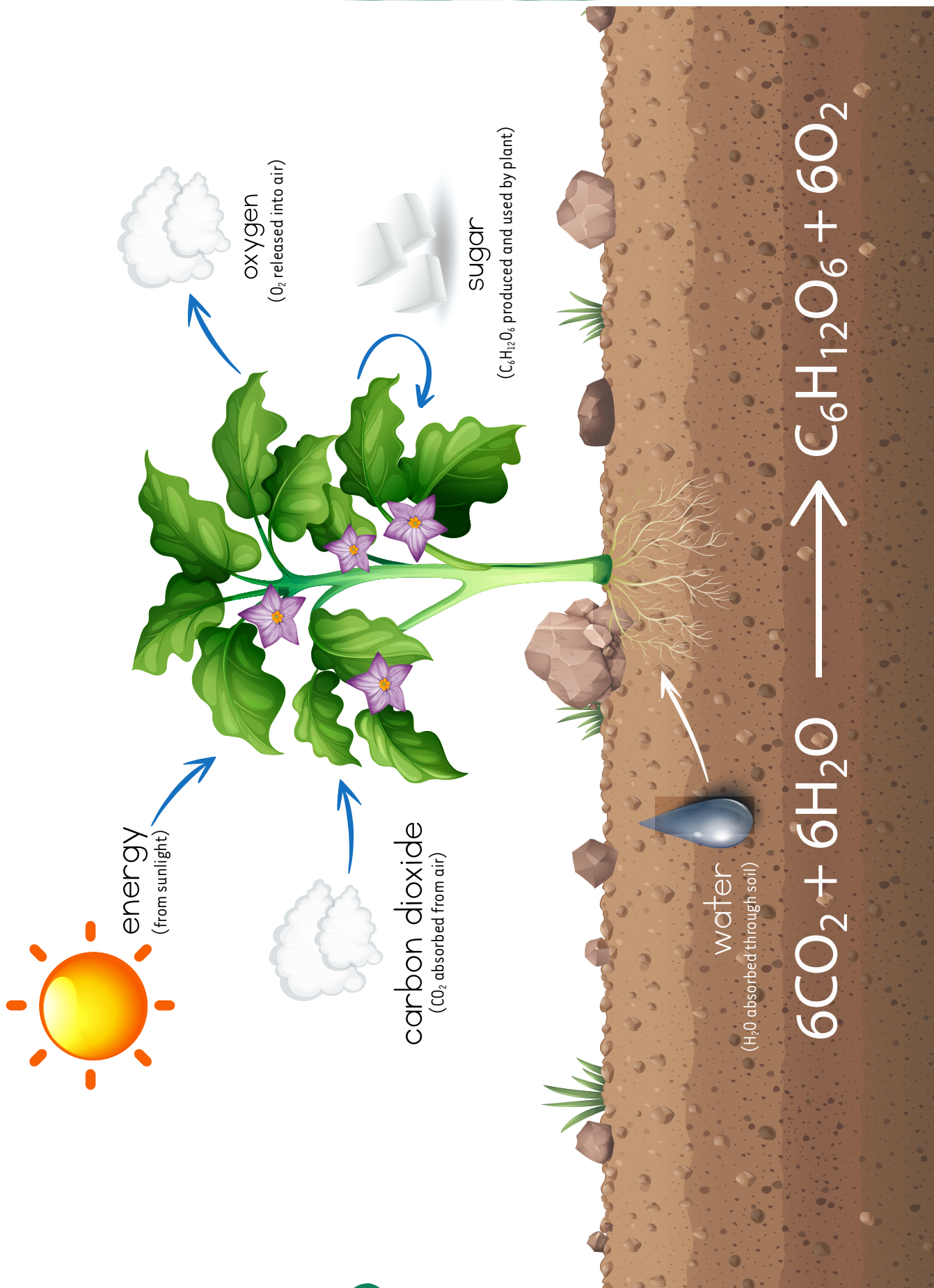
☐ Leaf Stomata Microscope Experiment Preparation



Note: There is a video for this activity, mentioned later in this lesson. If you plan only to watch the video, you can skip this preparation section.

Read to the children: We are going to learn more about how the sun gives life to plants, but before we do, we need to prepare for the microscope experiment we will complete later in the lesson.

Photosynthesis



PLANT CELLS

Objective

Help the children learn basic cell functions and the difference between a plant cell and an animal cell.



Preparation:

☐ None

Activity Supplies:

- 1 LEGO® brick
- Small piece of lumber (any size)
- Scissors
- Glue

Experiment Supplies:

- Small piece of celery
- Glass slides
- Distilled water
- Slide covers
- Microscope
- Paper towel (optional)
- Fingernail clippers

Plant Structure

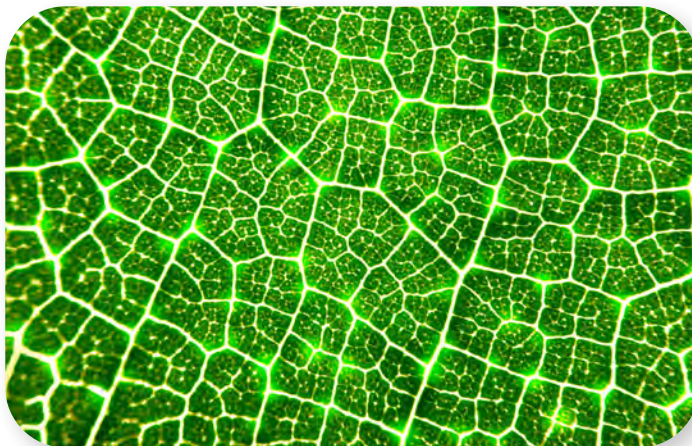
Show the children a LEGO® and a piece of lumber.

Read to the children: What do these two items have in common? What are some differences between them?

Both of these items can be used to build structures, but the structures will have different purposes and uses. Just as there are basic materials that can be used to build buildings, there are basic building blocks for all living things, such as plants, animals, humans, bacteria, protists, etc. These basic building blocks are called **cells**.

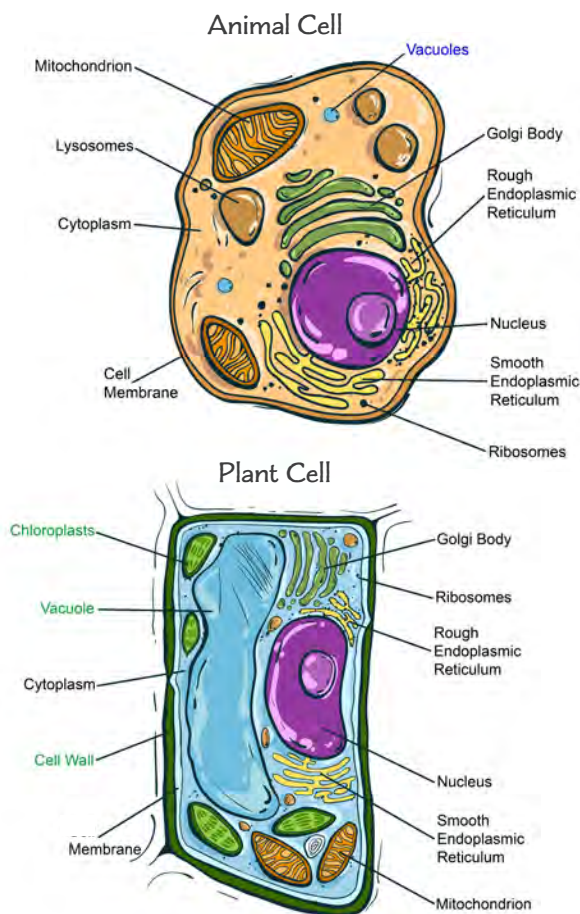


Plant cells are **eukaryotic** [you-carry-AW-tick]. This means they have a true nucleus—the round structure of most cells that has a double membrane and is the control center of the cell. The nucleus is a specialized



structure that can carry out different functions in the cell. Humans, animals, protists, and fungi also have eukaryotic cells, while bacteria have simpler **prokaryotic** [pro-carry-AW-tick] cells. Plants are **multicellular**, which means there is more than one cell in the plant to perform the functions of life.

is what you would see. **Show the children the animal cell and plant cell images below. Give the children a moment to look at the two cells.**



What differences and similarities do you notice about the cells now? If needed, point out the plant's cell wall, chloroplasts, and vacuole. When you looked at celery under the microscope, you were probably able to see patterns of cell walls that you could not see in the fingernail sample. That is because plant cells have walls, and animal cells do not.

■ Organelle Identification

Read to the children: Why do you think plant cells have these differences?

Look again at the animal cell and plant cell images above. **Have the children find each organelle, or part of the cell (in both cells if possible), as you read:** All eukaryotic cells have a *nucleus* that functions as the cell's command center, or brain. It controls what is happening in the cell. The *cell membrane* is what

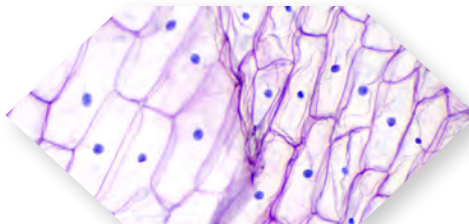
holds all the organelles (parts) of the cell together. It is *semipermeable*, which means it can allow certain things to go in and out of the cell. The *cytoplasm* is made up of a gel-like substance and helps cells maintain their shapes. It contains the organelles of the cell. The *mitochondrion* is known as the powerhouse of the cell, giving the cell its energy. *Ribosomes*, the *endoplasmic reticulum*, and *Golgi bodies* all work together to make and process proteins that are needed for the cell to function. *Lysosomes* are found in all animal cells, and they break down and recycle sugars and proteins.

Plant and animal cells both have *vacuoles*, but they function a little differently. Animal cells have several smaller vacuoles, and plant cells usually have just one large, permanent vacuole. Animal cell vacuoles store nutrients, waste, and some water, while a plant cell vacuole mainly stores water. A plant vacuole takes up the majority of the cell, so when a vacuole does not have enough water, the plant will wilt.

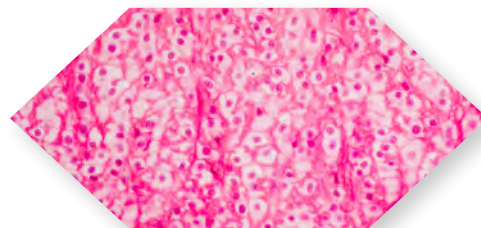
Plant cells need *chloroplasts*, which have the special job of capturing the energy of the sun so that photosynthesis can take place. Chloroplasts are also responsible for a plant's green color.

The last major difference between a plant cell and animal cell is that a plant has a *cell wall* in addition to the cell membrane. A cell wall can hold the plant's structure and shape when the vacuole is full of water and also when the vacuole's water level is low and the plant is wilting. **Note: *The Good and the Beautiful***

Onion Skin Cells



Cartilage Cells



Kingdoms and Classification unit goes into greater depth and detail about the cell and cell functions.

■ Animal and Plant Cells Journal Page



Have the children turn to the “Animal and Plant Cells” page in Lesson 9 of their student journals and complete the page. The answer key can be found at the end of the lesson.

■ Venn Diagram



Have the children turn to the “Venn Diagram” page in Lesson 9 of their student journals. Have the children fill in the Venn diagram with the things you discussed together. The answer key can be found at the end of the lesson.

■ Plant Observation



Have the children observe the seeds they planted in Lesson 2. Have the children turn to the “Plant Observation Log 7” page in Lesson 9 of their student journals and complete the page.



■ Lesson 9 Extension



Have children grades 7–8 complete the self-directed Lesson 9 extension titled “Botany Experiment: Observations and Recording” in their student journals.

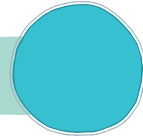


PLANT CLIMATE MAPPING

Cut along the dotted lines. Read each description, and then match the color to the map.



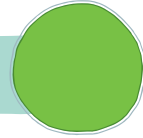
POLAR



Plants grow on every continent in the world, including Antarctica. While it is true that most of Antarctica cannot support plant life, some plants do grow along the Antarctic Peninsula and on nearby islands. There are no trees or shrubs, only liverworts and two flowering plant species: the Antarctic hair grass (pictured) and the Antarctic pearlwort.



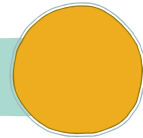
TEMPERATE



Temperate climate zones are able to sustain a large variety of plants and are distinguished by their four seasons: winter, spring, summer, and autumn. The temperature ranges greatly depending on the season, and precipitation is generally higher than in an arid region and less than in a tropical one.



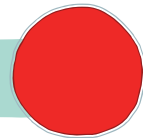
ARID



Plants can grow in very dry, arid areas, but not as abundantly as plants in temperate or tropical regions. The plants that grow in deserts, such as cacti, yuccas, and sagebrushes, are able to handle harsher conditions without as much water. The Joshua tree pictured here grows shallow roots spread out vertically to catch rainwater and can survive with only one good rainfall a year. It has thick, waxy bark to prevent water loss.



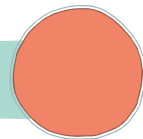
TROPICAL



The Amazon rainforest in South America is the largest tropical rainforest in the world. With moderate temperatures and lots of rain, a large variety of plants can grow here. The forest is so vast and there are so many plants that some plants are still being discovered. The plants you see on the water are giant water lilies; they can grow to almost 3 meters (10 feet) across!



MEDITERRANEAN



Known for grape vineyards and olive groves, the Mediterranean climate has dry, hot summers and cold, rainy winters. Compared to tropical regions, the rainfall is low, but it does not experience a snowy winter like temperate regions.

TREES

Objective

Help the children learn the parts of a tree and their functions.



Preparation:

- ☐ Cut out the leaves on the page titled “Tree Benefits—Leaves.”
- ☐ Cut out the strips on the page titled “Tree Parts—Definitions.”

Activity Supplies:

- Glue stick
- Crayons (optional)
- 1 blank piece of paper per child (optional)

Experiment Supplies:

- Sap from a tree
- Resin from a pine tree
- Microscope
- 2 slide covers and slides
- Paper towel

Note: For this lesson you may decide to go outside and sit under a big shady tree. This lesson also includes an optional nature walk. Plan for the additional time, or you may decide to reserve another day for the “Nature Walk and Bark Rubbings” activity to allow for more time to enjoy each of the activities.

☐ Redwoods Video



Watch the video titled “Redwoods” at goodandbeautiful.com/sciencevideos or on the Good and Beautiful Homeschool app, and then discuss the questions below.

1. What is one condition a redwood needs to reach its greatest height? [cool, damp climate, fog, etc.]
2. A redwood’s roots go down only 3.048 meters (10 feet); how do they anchor themselves? [roots go out 15.24 meters (50 feet) and wrap around other tree roots]

☐ Tree Benefits



Read to the children: The tallest living things on Earth are not only incredible to look at,

but they also provide great benefit to our planet. What are some of the benefits we receive from redwoods and other trees? [shade, beauty, fruit, etc.] We are going to learn some more benefits of trees. Some of them may be ones that you already listed.

Put the leaves from the “Tree Benefits—Leaves” page in front of the children. Have the children take turns picking a leaf, reading what it says, and gluing it to the tree on the page titled “Tree Benefits.” Place the completed page on the science wall. *Note: The leaves, when glued on, may hang off the page.*



Parts of a Tree



Have the children turn to the “Parts of a Tree” page in Lesson 12 of their student journals. Put the cut-out “Tree Parts—Definitions” strips on the table. Have the children take turns picking a definition and reading it aloud. Have the children determine which part of the tree the definition belongs to and glue or write their answers in their student journals. If you are sitting near a tree, have the children find the same part on the real tree. The answer key can be found at the end of the lesson.

Tree Resin and Sap Microscope Experiment



Have the children perform the experiment below or watch the video titled “Tree Resin and Sap Microscope Experiment” at goodandbeautiful.com/sciencevideos or on the Good and Beautiful Homeschool app.

1. Place a drop of sap on one slide and a drop of resin on the other.
2. Gently place slide covers on top of each and dab any wet edges with a paper towel. Carefully push out any air bubbles.
3. Have the children turn to the “Microscope Lab” page in Lesson 12 of their student journals. They should label the specimens, add the date, and draw a picture of what they see.

Science Wall: Vocabulary Words



Place the vocabulary cards SAP and RESIN on your science wall. Read and discuss the words and their definitions.



Poetry Activity

Read the following poem and discuss the messages the children find within the poem.

The Oak Tree

By Johnny Ray Ryder Jr.



A mighty wind blew night and day,
It stole the Oak Tree's leaves away,
Then snapped its boughs and pulled its bark
Until the Oak was tired and stark.

But still the Oak Tree held its ground
While other trees fell all around.
The weary wind gave up and spoke,
“How can you still be standing, Oak?”

The Oak Tree said, “I know that you
Can break each branch of mine in two,
Carry every leaf away,
Shake my limbs and make me sway.

But I have roots stretched in the earth,
Growing stronger since my birth.
You'll never touch them, for you see,
They are the deepest part of me.

Until today, I wasn't sure
Of just how much I could endure.
But now I've found, with thanks to you,
I'm stronger than I ever knew.”

Plant Observation



Have the children observe the seeds they planted in Lesson 2.



Have the children turn to the “Plant Observation Log 10” page in Lesson

12 of their student journals and complete the page.

Read to the children:
Now that all the plants
are receiving water and



CARNIVOROUS AND POISONOUS PLANTS

Objective

Help the children learn the characteristics of carnivorous plants and recognize common poisonous plants.



Preparation:

- Cut out the pictures and descriptions on the pages titled “Memory Game.”

Activity Supplies:

- None

□ Carnivorous Plants

Read to the children: We have learned about trees as tall as skyscrapers and cacti that can grow without water for a year, but today we are going to learn about some of the most unique plants on our planet. These rare plants do not rely solely on photosynthesis for nutrients. They obtain food by catching and digesting insects; like wolves or tigers, they are carnivorous!



Carnivorous plants eat insects because their soil does not contain the nutrients they need to survive—especially nitrogen, phosphorus, and potassium. Carnivorous plants often grow in places where many

other types of plants cannot grow because of the lack of nutrients.

Gratefully, carnivorous plants are not harmful to humans. While a human could trigger a trap to close, he or she would be much too large to actually get trapped, harmed, or digested.

Carnivorous plants may not be harmful to humans, but some plants are poisonous to touch or eat, and they can give you rashes or make you sick. We are going to play a matching game to learn about and recognize specific carnivorous and poisonous plants.

□ Carnivorous and Poisonous Plants Memory Game



Shuffle the “Memory Game” cards and spread them out on the table. Place all the picture cards on the right side of the table and the description cards on the left side of the table. Turn all the cards facedown, and then proceed as follows:

1. Have a child pick one description card and ask the child, or adult if needed, to read it aloud.
2. Have the child pick one picture card and determine if the cards match.

Memory Game

VENUS FLYTRAP



BLADDERWORT



RAFFLESIA



PITCHER PLANT



SUNDEW



BUTTERWORT



POISON OAK



POISON IVY

