



## Plant Structure, Function, and Classification Investigation

To maximize your students' learning, these are suggested pre- and post-visit activities.

*Prepared by Eugenia Johnson-Whitt in collaboration with Cleveland Botanical Garden staff*

### Key Terms

ecosystem - a community of organisms and its environment functioning as an ecological unit

dichotomous key - a method for the identification of organisms based on a series of choices between alternative characteristics

sessile - attached directly by the base : not raised upon a stalk

### Pre-visit reading ideas

*Carl Linnaeus: Travels.* Black, David, editor. Charles Scribner's Sons.

This is a journal of the famous originator of the classification system. It is useful to take segments and show the detail of his observations. Very instructive if you plan to have your students keep a nature journal and in teaching descriptive writing lessons

*George Washington Carver: Scientist & Symbol.* McMurry, Linda O. Oxford University Press.

This is a well written account of the life of George Washington Carver. It begins with his kidnapping as an infant, takes you along with him on his quest for an education in a prejudiced world and leads you to the end of his life as a noted agricultural scientist and statesman. Well researched, this book includes an index and extensive bibliography.

*How Flowers Work: A Guide To Plant Biology.* Gibbons, Bob. Blandford Press, Ltd., Sterling Publishing Co.

Unique in botany related books, it focuses solely on how flowering plants fit into the plant kingdom as a whole. It begins with an interesting presentation on the classification and naming of plants. The book also discusses the cellular structure of plants, plant components, photosynthesis and other aspects of plant growth. Plant reproduction is the focus of Chapter 4, and Chapter 5 describes the development of seeds and fruit, seed formation, seed dispersal and germination. The remaining chapters of the book cover life cycle and life span, the seasonal cycle, the ecology of plants (symbiotic relationships and succession) and practical uses of plants. The text is interesting and not overly technical – detailed photographs and illustrations really aid understanding.

*Collecting and Preserving Plants for Science and Pleasure.* MacFarlane, Ruth B. (Alford). Arco Publishing, Inc.

This book clearly and simply explains how to collect and preserve plants. Ms MacFarlane thoroughly describes the methods of identifying, labeling, mounting, and preserving plant material.

*The Kingdom of Life: Plants.* Silverstein, Alvin, Virginia, and Robert. Twenty-first Century Books (Henry Holt and Company).

*Plants* gets off to a great start with its explanation of the importance of the classification system and characteristics of plants (e.g. what makes a plant a plant) and the plant family tree. The remainder of the book is a description of each of the ten divisions of the plant kingdom.

Post-visit activity ideas:

1. Have students explore the question: "Why do we classify plants?" Display ten plant specimens (potted plants, photographs, twigs, etc.). Have students work in small groups of three to five. Each group will be given poster board and markers. They will develop a chart putting plants with common features in the same column. When completed have each group discuss the challenges they faced in the activity. Ask students what features they used to classify the plants.
2. Visit a local plant nursery (either in person or on-line) or visit CBG and have students record the name of economically important plants grown in the area. Ask students how they would be able to tell the plants apart, what features stand out, and what makes the plants special or unusual.
3. Lead classroom discussion. Ask student which features they notice most when observing plants. Have students develop a list of plant features they may need to know to identify plants they will need to know based on classroom discussion.
4. Introduce students to the concept of a dichotomous key. What do keys do? Plant keys help to identify plants. Have students use plant keys to identify plants.