

A detailed botanical illustration of a plant with several upright stems. The stems are green and have small, narrow leaves. The flowers are blue with a white center, and some are in various stages of development, including buds. The plant is set against a light yellow background.

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BOTANY READINGS

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What is Plant Biology?

Biology is the study of life. Plant biology (*aka* botany) is the study of plants, which includes among other things, how plants evolved on earth, their structure, how they grow and develop, and how they interact with the environment.

When all of life was divided arbitrarily into the animal and plant kingdoms, plant biology also included the study of bacteria, algae, and fungi. Today, bacteria, algae, and fungi are not included in the plant kingdom, but many individuals who study bacteria, fungi, and algae still consider themselves as plant biologists or botanists.

The following are some of the well-known disciplines within plant biology.

- **plant systematics** (taxonomy), the study of naming and classification
- **horticulture**, the study of plants grown for immediate use by humans
- **forestry**, the study of trees and management of forests
- **plant physiology**, the study of plant functions
- **plant anatomy**, the study of plant structure
- **plant morphology**, the study of plant form, including changes during the total life history of plants
- **plant ecology**, the study of plants in relationship to their environment
- **plant pathology**, the study of plant diseases
- **paleobotany**, the study of plant fossils

Other commonly recognized biological disciplines include:

- **mycology**, the study of fungi;
- **zoology**, the study of animals;
- **virology**, the study of viruses;
- **bacteriology**, the study of bacteria;
- **microbiology**, the study of microscopic organisms including bacteria and fungi;
- **phycology**, the study of algae;
- **cell biology**, the study of cells;
- **molecular biology**, the study of the molecular basis of life;
- **evolution**, the study of how life changed through time on earth; and
- **genetics**, the study of heredity.

Note that the various disciplines within the biological sciences are not always exclusive. For example, microbiology may include the more specific discipline bacteriology. An individual who studies bacteria may be called either a microbiologist or bacteriologist. Also, some of the disciplines such as cell and molecular biology cut across disciplines that are based on the organisms being studied. That is to say, a cell biologist may study either bacteria, plants, fungi, animals, or one of the organisms that do not conveniently fit into those groups.

Back to the question at the beginning of this reading: What is plant biology? Plant biology includes any of the disciplines listed above in which plants or organisms historically considered as plants are studied. These primarily include what are recognized today as true plants: the flowering plants, gymnosperms, ferns and their relatives, and mosses and liverworts. In addition, bacteria; cyanobacteria (blue-green algae); various types of algae including the green, brown, and red algae; and fungi often are taught as part of plant biology, even though few biologists today consider these organisms as plants *per se*.