

**INTEGRATING BIOLOGY****● Organisms That Glow**

Bioluminescence is light that originates in an organism—a plant or an animal. The light, which is more of a glow, is produced by chemical reactions. In these reactions, chemical energy is converted to light, which is radiant energy. The conversion is almost 100 percent efficient. Therefore, very little energy is given off as heat in the process. For this reason, bioluminescence is sometimes called cold light.

Most bioluminescent organisms are *marine*, meaning that they are found in the sea. Glowing organisms in the sea range from the microscopic, such as dinoflagellates, to several varieties of fish, jellyfish, shrimp, and squids. The dinoflagellates are single-celled, luminous organisms that glow when they are stimulated by physical motion, such as the rolling of the ocean waves. When washed ashore, dinoflagellates will glow in response to the physical action of a person walking on them.

Almost all marine bioluminescence is blue-green. This color signals mealtime to the many creatures for whom glowing organic matter in the sea is a main source of food. These creatures flock to anything that glows, hoping to find a meal. Instead, many of these creatures become a meal for predatory fish. Some predators have bioluminescent parts, which they use as lures. Their glowing parts attract prey much as a porch light attracts moths.

**Your Turn to Think**

1. Explain how the following two facts may be related: Most sea organisms cannot see colors other than blue. Almost all marine bioluminescence is bluegreen.
2. Chemical reactions that release energy are called exothermic, and reactions that absorb energy are endothermic. How is bioluminescence best classified? Why?
3. Another type of naturally occurring light is fluorescence, in which light is first absorbed from a source and then given off. How does fluorescence differ from bioluminescence?