

What is Bioluminescence?

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Have you ever seen a firefly at night before? You probably already know that they emit light from their bodies. But have you ever wondered *why* and *how* they can do this?

Fireflies emit light from their body in a process called *bioluminescence*.

Bioluminescence is defined as the biochemical emission of light from organic material. Bioluminescence is typically used to warn or evade predators, detect prey, same-specie communication, and for finding mates. But how these organisms even light up in the first place? Well, it all in the chemistry.

It all starts with 2 chemicals, **luciferin** (the main component) and either the enzyme **luciferase** or **photoprotein**. In the chemical reaction of dinoflagellates, a type of unicellular algae, the interaction between luciferin and luciferase creates a substance called **oxyluciferin**, this oxyluciferin gets in a very excited state following the chemical reaction and releases a photon after calming down to its regular state; that is how organisms that uses luciferin and luciferase produce light. But how about organisms that use photoprotein instead of luciferase? Well, it basically the same thing! When the luciferin chemically interacts reacts with the oxygen inside photoprotein it releases energy, mainly in form of light. Fascinatingly, the color of the light emitted depends on the specific chemical structure of the luciferin molecules. This is why fireflies emit a yellowish-orange color but the bacteria in anglerfish emit a blue color.

That is bioluminescence works in living organisms. To learn more information about this topic, feel free to research our sources or take the test linked to this. See you in the next article!

Sources:

National Geographic:

<https://education.nationalgeographic.org/resource/bioluminescence/>

National Center for Biotechnology Information:

<https://www.ncbi.nlm.nih.gov/pmc/articles>