

Student Activity Worksheet: Fluorescing frogs

Directions: Read the *Science News Explores* article "[Scientists Say: Fluorescence](#)" and answer the first set of questions individually. Then read the *Science News* article "[Many frogs glow in blue light, and it may be a secret, eerie language](#)" and discuss the second set of questions with a partner.

The science behind fluorescence

1. In your own words, what is fluorescence? And what conditions must be met for a fluorescent material to glow?

2. Given the examples of fluorescent materials from the article, or based on what you saw in the demonstration by your teacher, why do you think different types of fluorescent materials glow differently (with various types of incident light, intensities, color, etc.)?

3. Explain what happens to the electrons in a fluorescent atom or molecule when they encounter certain types of electromagnetic radiation or light. How does this behavior relate to your understanding of atomic structure?

4. Draw a simple diagram depicting how light interacts with electrons in a fluorescent material. Make sure you show the external light source and electron energy levels and indicate when light is being absorbed and released by the electrons.

Fluorescing frogs

1. Why are the frogs an example of biofluorescence? Explain the difference between fluorescence and biofluorescence.

2. Why didn't researchers who previously studied frog fluorescence know more about the variety of fluorescence seen in different frog species? Based on what you now know, why would their experimental procedures fail to find fluorescence?

3. What is a potential evolutionary advantage of this fluorescence in frogs?

Optional extension: If molecules produce characteristic wavelengths of fluorescent light, how could that be useful in scientific research? Research an example of fluorescence that has been applied in science. Describe it and explain its purpose.



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