



LED Jellyfish

Have you ever seen jellyfish and wondered how they seem to glow in the dark? Discover the bioluminescent properties that allow a jellyfish to create light and design your own glowing jellyfish model using a circuit!

TEKS:

SCI 4.6A: The student is expected to differentiate among forms of energy, including mechanical, sound, electrical, light, and heat/thermal energy.

SCI 4.6B: The student is expected to differentiate between conductors and insulators.

SCI 5.6A: The student is expected to explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy.

SCI 5.6B: The student is expected to demonstrate that the flow of electricity in circuits requires a complete path through which an electric current can pass and can produce light, heat, and sound.

Materials:

- Clear tape
- 3V coin cell battery CR 2032 (can be purchased [here](#))
- Copper tape (can be purchased [here](#))
- 5mm LED light bulb (can be purchased [here](#))
- Plastic Easter egg or 3oz paper cup
- Roll of streamers
- Yarn or string
- Optional – Stickers, googly eyes, etc. for decoration

How To:

1. Test your LED light and battery to make sure they work. The LED should light up when you insert the battery between its legs/pins. If not, try turning the battery around. If the LED still won't light up, try a different battery. You may also have to try a new LED. You need to be sure everything works before creating your LED jellyfish. A circuit to light up an LED lightbulb is being created to represent the bioluminescent properties of a glowing jellyfish.
2. Next, create the main body of the jellyfish with a 3oz paper cup or plastic Easter egg. If you're using a plastic Easter egg, separate the egg into two pieces and use the bigger half of the Easter egg as the body.

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3. Poke a hole in the center of the bottom of the egg/cup. Thread the yarn or string through the hole and form a loop. Tie a knot on the inside of the egg/cup so the yarn or string doesn't come loose! This will be used to hang your jellyfish at the end.
4. Using copper tape, tape a strip from the inner bottom surface of your egg/cup along the wall and up to the rim. Trim any excess tape at the rim.
5. On the opposite side of the egg/cup wall, repeat step 4. Be sure to leave a 1-cm gap between the strips of copper tape in the bottom of the egg/cup. This is where your LED lightbulb will go.
6. Separate the legs of the LED lightbulb and tape the bulb to the bottom of the egg/cup using clear tape. Make sure each leg of the LED lightbulb is touching one of the copper tape strips.
7. Peel the backing off the copper tape and fold it back against itself to make a 1-cm flap that has conductive material on both sides. Align this flap with one of the copper tape strips in your egg/cup (near the rim) and continue taping the copper tape horizontally along the open edge to connect it to the other vertical strip.
8. Place your battery at the end with the flap between the placed copper tape and the flap. Test your circuit. If it does not work, try flipping your battery around.
9. Using clear tape, secure the battery tightly in place for the circuit to be on.
10. Turn your egg/cup upside down. This is now the body of your jellyfish. Using streamers, cover your egg/cup.
11. Tape streamers to the top of the upside-down cup to hang down as jellyfish tentacles. Cut the streamers into smaller strips to make more tentacles!
12. Use any other materials you want to continue decorating your egg/cup to make it look like a jellyfish. Explore your creativity with this craft!



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STEM Explanation:

The LED jellyfish can “glow” through the use of a circuit, which consists of the battery, conductive tape, and LED bulb. Electricity travels from the battery through the copper tape to the LED to power the light. To make the LED lights turn on, the battery must be connected to the circuit. This makes a closed circuit through which the electric current can pass through the circuit and make the LED lights work.

In nature, jellyfish can “glow” in the dark because they are bioluminescent. This means they can produce light. There are many other deep ocean animals that are also bioluminescent. Instead of using electricity, bioluminescent creatures create light from a chemical reaction. Two chemicals, usually luciferin and luciferase, combine within the animal to release energy in the form of light. This is an adaptation that bioluminescent jellyfish use as a defense against predators.

Career Connection:

Marine biologists study the organisms that are found in the ocean and other bodies of salt water. Most marine biologists mainly focus on a single sub-field such as coral reefs, coastal habitats, oceanic trenches or microscopic marine life. These scientists usually work to study and preserve ocean life while also educating people about it.

Resources:

https://www.amazon.com/Tapes-Master-6-4mm-Copper-Foil/dp/B01KYDM6CM/ref=sr_1_4?ie=UTF8&qid=1509732353&sr=8-4&keywords=conductive+tape

<https://www.amazon.com/Panasonic-Cr2032-Lithium-BatteryEcr2032/dp/B00REWNF2M/ref=sr16?ie=UTF8&qid=1510766131&sr=8-6&keywords=3v+coin+battery+cr2032>

https://www.amazon.com/Emitting-Luminous-Electronics-Experient-Dongyition/dp/B06XDQRMPK/ref=pd_day0_147_6?encoding=UTF8&pvc=1&refRID=N21ZTNNSZQYGAEV9EFS

https://www.amazon.com/Emitting-Luminous-Electronics-Experient-Dongyition/dp/B06XDQRMPK/ref=pd_day0_147_6?encoding=UTF8&pvc=1&refRID=N21ZTNNSZQYGAEV9EFS

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https://www.amazon.com/Emitting-Luminous-Electronics-Experient-Dongyition/dp/B06XDQRMPK/ref=pd_day0_147_6?encoding=UTF8&pvc=1&refRID=N21ZTNNSZQYGAEV9EFS

[S](https://www.amazon.com/Emitting-Luminous-Electronics-Experient-Dongyition/dp/B06XDQRMPK/ref=pd_day0_147_6?encoding=UTF8&pvc=1&refRID=N21ZTNNSZQYGAEV9EFS)

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