

Missouri Science Scoring Rubric

Item ID: 1020600

Grade: Biology

Scoring Guide: 9-12.LS1.C.1 and 9-12.ETS1.B.1

Score	Description
1	<p>This response demonstrates a thorough understanding of constructing a scientific explanation based on evidence for the role of photosynthesis and cellular respiration in the cycling of matter and flow of energy into and out of organisms by</p> <p>[Clarification Statement: Emphasis is on tracing movement of matter and flow of energy.]</p> <ul style="list-style-type: none">Identifying and describing evidence to support the model after evaluating two experimental designs in showing that lichens perform photosynthesis. <p><i>*The response is clear, complete, and correct.</i></p>
0	<p>The response provides insufficient evidence to demonstrate any understanding of the concept being tested.</p> <p>OR</p> <p>The response identifies an investigation, but does not provide a reasonable explanation with evidence to support that investigation.</p>

Exemplar Responses:

Answer for Student A (1 point)

- Student A
- Evidence from the model shows that carbon dioxide provides carbon for photosynthesis. This design does include a chemical to release carbon dioxide the plant can use, as well as the plant has water. However, it does not allow for any type of light source/energy to reach the lichen due to the thick black paper covering the jar. This will prevent the lichen from being able to photosynthesize at a maximum rate. Evidence from the model shows that carbon dioxide provides carbon for photosynthesis.

Answer for Student B (1 point)

- Student B

- Evidence from the models shows that sunlight is needed to provide energy for photosynthesis. This design provides a light source/light energy and water, but does not provide carbon dioxide so photosynthesis will not be able to occur at its maximum potential. The chemical placed inside the bell jar will absorb some of the carbon dioxide that the lichen would need to conduct photosynthesis.