

Aerobic respiration in beans



**ASSIGN
BUSTER**

1. What evidence do you have to prove cellular respiration occurred in beans? Explain. The evidence you have is the color change that occurs in the beakers of beans. This occurs because of the use of bromothymol blue indicator that turns yellow when in acidic conditions, turns green when in neutral conditions and turns blue when in basic conditions. Due to the carbon dioxide being released into the water it forms carbonic acid making the solution turn yellow from the indicator.

2. Were there differences in the rates of respiration in pinto beans vs. kidney beans? If so, why? Yes, because kidney beans are bigger they produce more oxygen during germination than pinto beans. Larger kidney beans have a higher rate of respiration than the smaller pinto beans.

3. If this experiment were conducted at 0°C or 45°C, what differences would you see in the rates of respiration? Why? If the experiment was conducted in 0°C then the rate of respiration would decrease and if the experiment was conducted in 45°C then the rate of respiration would increase. This occurs because the seed is requiring use of more energy to continue respiration in the cold environment and is more comfortable in warmer temperatures.

4. What are the controls in this experiment, and what variables do they eliminate? Why is it important to have a control for this experiment? The controls were the amount of water in each beaker, the amount of bromothymol blue in each beaker and the size of the beakers. The variables they eliminated were the oxygen levels and temperature. It is important to have a control because seeds can germinate very differently if they are in different environments.