

Mouse Cellular Respiration HW

A scientist set up a respiration chamber as shown below. She placed a mouse in flask B. Into flasks A, C, and D she poured distilled water mixed with the acid-base indicator phenolphthalein. In the presence of CO_2 , phenolphthalein turns from pink to clear. She allowed the mouse to stay in the chamber for about an hour.

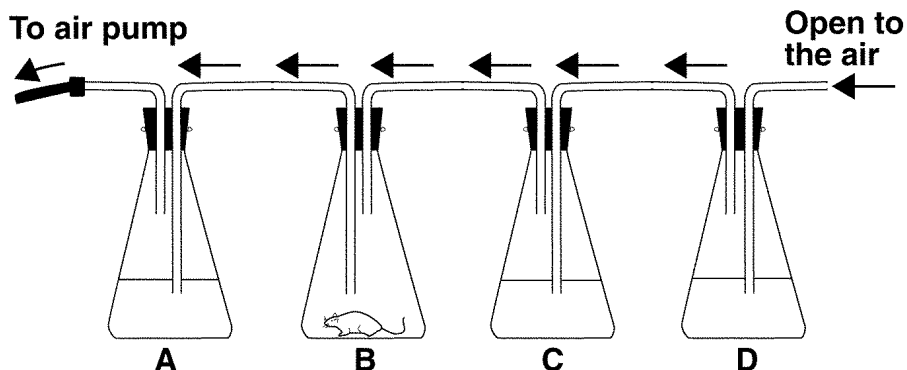


Figure 9–2

1. **Inferring:** Write the equation for cellular respiration. Based on this equation and the setup shown in Figure 9–2, what substance(s) would you expect the mouse in flask B to give off?
2. **Interpreting Graphics:** What will the mouse require to carry out cellular respiration? Look at the flasks in Figure 9–2. Describe the flow of materials through the flasks. Will the mouse receive fresh air so that it can survive?
3. **Interpreting Graphics:** Based on Figure 9–2, how will the scientist be able to detect whether the mouse is carrying out cellular respiration?
4. **Applying Concepts:** Assume that the scientist set up an identical respiration chamber, except that in this setup she placed a cricket in flask B instead of a mouse. At the end of one hour, she measured the amount of CO_2 given off by the cricket and the mouse. A small amount of CO_2 had been given off by the mouse, but little to no CO_2 had been given off by the cricket. Was the cricket undergoing cellular respiration? Explain these results.
5. **Predicting** Assume that the scientist set up an identical respiration chamber, except that in this setup she placed a mouse that had been exercising on a hamster wheel. Then, the scientist measured the amount of CO_2 given off by both mice at the end of 15 minutes. Predict which setup produced the most CO_2 . Explain your answer.