

# Is Sammy Alive?

1. Sammy was a normal, healthy boy. There was nothing in his life to indicate that he was anything different from anyone else. When he completed high school, he obtained a job in a factory, operating a machine press. On this job he had an accident and lost his hand. It was replaced with an artificial hand that looked and operated almost like a real one. Is Sammy alive?
2. Soon afterward, Sammy developed a severe intestinal infection and a large portion of his lower intestine had to be removed. It was replaced with an elastic, silicon tube. Is Sammy alive?
3. Everything was looking good for Sammy until he was involved in a serious car accident. Both of his legs and his good arm were crushed and had to be amputated. He also lost an ear. Artificial legs enabled Sammy to walk again and an artificial arm replaced the real arm. Plastic surgery enabled doctors to rebuild the ear. Is Sammy alive?
4. Over the next several years, Sammy was plagued with internal disorders. First, he had to have an operation to remove his aorta and replace it with a synthetic vessel. Next, he developed a kidney malfunction and the only way he could survive was to use a kidney dialysis machine (no donor could be found). Later, his digestive system became cancerous and was removed. After that, he could only receive nourishment intravenously. Finally, his heart failed. Luckily, a donor heart was available and the transplant was a success. Is Sammy alive?
5. It was now obvious that Sammy had become a medical phenomenon. He had artificial limbs, nourishment was supplied to him through his veins; therefore he had no solid wastes. All other wastes were removed by the kidney dialysis machine. The heart that pumped his blood to carry oxygen and food to his cells was not his original heart. But Sammy's transplanted heart began to fail. He was immediately placed on a heart-lung machine. This supplied oxygen and removed carbon dioxide from his blood and circulated blood through his body. Is Sammy alive?
6. The doctors consulted bioengineers about Sammy. Because almost all of his life-sustaining functions were being carried on by machine, it might be possible to compress all of these machines into one mobile unit, which would be controlled by electrical impulses from Sammy's brain. This unit would be equipped with mechanical arms to enable him to perform tasks. A mechanism to create a flow of air over his vocal cords might enable him to speak. To do this; they would have to amputate Sammy's body at the neck and attach his head to the machine, which would then supply all nutrients to his brain. Sammy consented, and the operation was successfully performed. Is Sammy alive?
7. Sammy functioned well for a few years. However, slow deterioration of his brain cells was observed and was diagnosed as terminal. So the medical team that had developed around Sammy began to program his brain. A miniature computer was developed: it could be housed in a machine that was human-like in appearance, movement, and behavior. As the computer was installed, Sammy's brain cells completely deteriorated. Sammy was once again able to leave the hospital with complete assurance that he would not return with a biological illness. Is Sammy alive?

# Biology CRQ

Name: \_\_\_\_\_

HR: \_\_\_\_\_

*After reading the story, identify at what point you believe Sammy was no longer “alive.” Justify your reasoning referring to the 8 characteristics of life. Cite 2-3 examples from the text.*

8 Characteristics of Life:

<b>Restate</b>		
<b>Answer</b> (thesis)		
<b>Citation</b> (quotes/evidence)	1.	2.
<b>Explain</b>	1.	2.
<b>Summarize</b>		