

# LAB: Is Sammy Alive?

## H O N O R S B I O L O G Y : U N I T 1

Sammy was a normal, healthy boy. There was nothing in his life to indicate that he was in anyway different from anyone else. When he completed high school he obtained a job in a factory where he operated a large machine press. One day, his hand got caught in the press and was cut off. It was replaced with an artificial hand that looked and operated almost like a real hand.

*Is Sammy Alive?*  Yes  No

*Reason:*

Soon afterwards, Sammy developed a severe intestinal infection. A large portion of his lower intestine had to be removed. It was replaced with an elastic tube made of silicon. Sammy was able to eat almost all the same foods he ate before surgery.

*Is Sammy Alive?*  Yes  No

*Reason:*

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. Since no donor could be found, the only way he could survive was to use a kidney dialysis machine. A short time later, his digestive system became cancerous and had to be removed. He received nourishment through a feeding tube. Sammy also had a massive heart attack that resulted in him needing a heart transplant. Lucky for Sammy, a donor was found and a transplant was performed.

*Is Sammy Alive?*  Yes  No

*Reason:*

It was now obvious that Sammy had become a medical phenomenon. He had artificial limbs, a feeding tube, and a kidney dialysis machine that removed the waste material from his blood. The heart that pumped his blood to carry oxygen and food to his cells was not his original heart. Over time the transplanted heart began to fail and he was placed on a heart-lung machine. This machine

supplied oxygen and removed carbon dioxide from his blood. It also circulated blood through his body.

*Is Sammy Alive?*  Yes  No

*Reason:*

The doctors consulted bioengineers about Sammy. Since almost all of Sammy's life sustaining functions were being carried out by machines, it might be possible to compress all of these functions into one mobile unit. This unit would also be controlled by electrical impulses from Sammy's brain. This unit would also be equipped with mechanical arms to enable him to perform manipulative tasks. A mechanism to create a flow of air over his vocal cords would enable him to speak. To be able to do this, doctors would have to amputate Sammy's head at the neck and attach it to the machine. Sammy consented and the operation was successfully performed.

*Is Sammy Alive?*  Yes  No

*Reason:*

Sammy functioned very well for a few years. However, a slow deterioration of his brain cells was observed and was diagnosed as terminal. Sammy's medical team began to download all of his memories and thoughts into a miniature computer. The computer was housed in machine that was humanlike in appearance, movement, and mannerisms. 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 never become ill again.

*Is Sammy Alive?*  Yes  No

*Reason:*

*Is there a difference between "living" and "life"? Explain.*