

## Introduction

1. The Seven Properties of Living Beings (adapted from Khan Academy website)
  - Organization - Living things are highly organized, and all living organisms are made up of one or more cells, which are considered the fundamental units of life.
  - Metabolism - Life depends on an enormous number of interlocking chemical reactions. These reactions make it possible for organisms to do work—such as moving around or catching prey—as well as growing, reproducing, and maintaining the structure of their bodies. Living things must use energy and consume nutrients to carry out the chemical reactions that sustain life. The sum total of the biochemical reactions occurring in an organism is called its metabolism.
  - Homeostasis - Living organisms regulate their internal environment to maintain the relatively narrow range of conditions needed for cell function. For instance, your body temperature needs to be kept relatively close to 98.6° F (37° C).
  - Growth - Living organisms undergo regulated growth.
  - Reproduction - Living organisms can reproduce themselves to create new organisms. Reproduction can be either asexual, involving a single parent organism, or sexual, requiring two parents.
  - Response - Living organisms show “irritability,” meaning that they respond to stimuli or changes in their environment.
  - Evolution - Populations of living organisms can undergo evolution, meaning that the genetic makeup of a population may change over time.
  
2. Three Key Systems
  1. The circulatory system – Heart and delivery of blood
  2. The pulmonary system – Lungs and processing of oxygen
  3. The nervous system – Brain, spine and the nerves it controls

## Two approaches to defining “life” in a particular human being

3. The 1968 “Harvard Criteria” for Brain Death
  1. Is the patient unresponsive and unresponsive, with a total unawareness of externally applied, and even painful, stimuli.
  2. If the patient has no spontaneous movements or breathing, as well as an absence of response to stimuli such as pain, touch, sound, or light.
  3. If the patient has no reflexes, has fixed dilated pupils, lack of eye movement, and lack of deep tendon reflexes.

In addition, there are tests including an electroencephalogram, and the following must be present: Body temperature (at least) 32° C, and absence of CNS depressants

## 4. Talmud, Yoma 85a

Rav Pappa said: There is debate as to whether checking the lower portions suffices, but when starting from the upper portions, then once one has checked the nose, there is no further checking required.

## 5. Rabbi Moshe Feinstein (20<sup>th</sup> century USA), Igrot Moshe Yoreh Deah 2:146

It is clear and obvious that the nose is not the body part that gives a person life, and it is not at all one of the body parts on which life depends. Rather, the brain and heart give life to a person, including [providing] the ability to breathe through one’s nose. [The nose] is only the body part through which breathing happens, via the brain and heart, and we lack a sign of life other than via the nose – even though it is not the enabler of breath – because we cannot determine well via the heart or navel, and we certainly cannot determine the brain’s function.

6. Mishnah, Oholot 1:6

Humans... as well as domestic and wild animals do not communicate *tumah* until their lives depart. If their heads are cut off, then they communicate *tumah* even if they still spasm, as in the case of a spasmodic [*mefarkese*] tail of a lizard.

7. Rabbi Moses Maimonides (Rambam, 12<sup>th</sup> century Egypt), Commentary to Oholot 1:6

This occurs in some types of creatures, when the mobilizing force is not spread through all of the organs from a single foundation and source, but is scattered through the body.

8. Talmud, Chullin 21a

If the neck and most of its flesh are broken, the body communicates *tumah*.

9. Rabbi Moses Maimonides (Rambam, 12<sup>th</sup> century Egypt), Commentary to Oholot 1:6

*Mefarkisin* – The movement of their *eivarim* after death is called *pirkus*.

10. Rabbi Moses Maimonides (Rambam, 12<sup>th</sup> century Egypt), Laws of Shechitah 3:19

If the neck and most of its flesh are broken, or its back is torn open as is done to fish, or most of its trachea is severed, or its esophagus is punctured in the spot that would be suitable for *shechitah*, this animal is considered to be a living corpse.

11. Rabbi Eliezer Waldenberg (20<sup>th</sup> century Israel), Tzitz Eliezer 10:25:7

There are those who erroneously think that an examination of the nostrils indicates the status of neural function, and they would like to establish that life is dependent on neural function. I have heard that some modern doctors would like to establish that the essence of life is in the brain. In truth, this is a complete error, and it is against what the sages established for us. This determination has killed many people, based on what is now termed "clinical death." As is known, neural function halts long before cardiac function, and in many cases the doctors are able to restore cardiac function, along with the life of the body, but not neural function, and a person can survive in this state for a long time. If we were to follow cessation of neural activity, and establish this as death, and use the heart, etc, we would end up murdering people.

12. For more information: [http://www.rabbis.org/pdfs/Halachi\\_%20Issues\\_the\\_Determination.pdf](http://www.rabbis.org/pdfs/Halachi_%20Issues_the_Determination.pdf)