

Left Handed Molecules!

Some researchers think that light from a newly forming star 1,500 light-years away (1 lightyear is equal to about 9.6 trillion kilometers) may hold the answer to an Earthly riddle that has been puzzling scientists for over 100 years!

We Are All Lefties!

In 1848, Louis Pasteur discovered that carbon containing molecules come in left-handed and right-handed forms. Each of the molecules is an exact mirror image of the other, just as each of your hands is a mirror image of the other. These molecules are made of the same elements, but they differ in the elements' arrangement in space.

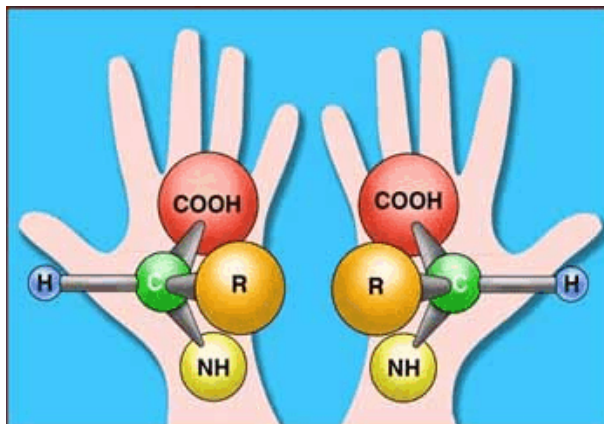
Shortly after Pasteur's discovery, researchers stumbled across an interesting but unexplained phenomenon—all organisms, including humans, are made almost entirely of left-handed molecules! Chemists were puzzled by this observation because when they made amino acids in the laboratory, the amino acids came out in equal numbers of right- and left-handed forms. Scientists also found that organisms cannot even use the right-handed form of the amino acids to make proteins! For years, scientists have tried to explain this. Why are biological molecules usually left-handed and not right-handed?

Cosmic Explanation .

Astronomers recently discovered that a newly forming star in the constellation Orion emit a unique type of infrared light. infrared light has a wavelength longer than the wavelength of visible light. The wave particles of this light spiral through space like a corkscrew. This light spirals in only one direction. Researchers suspect that this light might give clues to why all organisms are lefties.

Laboratory experiments show that depending on the direction of the ultraviolet light spirals, either left-handed or right-handed molecules are destroyed. Scientists wonder if a similar type of light may have

been present when life was beginning on Earth. Such light may have destroyed most right-handed molecules, which explains why life's molecules are left-handed.



Just like your right and left hands are mirror images of each other, right and left molecules are mirror images of each other. This means that they can have very similar properties, but are not interchangeable.

Skeptics argue that the infrared light has less energy than the ultraviolet light used in the laboratory experiments and thus is not a valid comparison. Some researchers, however, hypothesize that both infrared and ultraviolet light may be emitted from the newly forming star that is 1,500 light-years away.

Find Out More:

1. The French chemist Pasteur discovered left-handed and right-handed molecules in tartaric acid. Do some research to find out more about Pasteur and his discoveries, write a one page report about them.

OR

2. Research right and left handed amino acids on the internet and explain the controversy that has developed because of them.