

# CARL WOESE

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## Carl Woese

### The Scientist behind A New Domain of Life

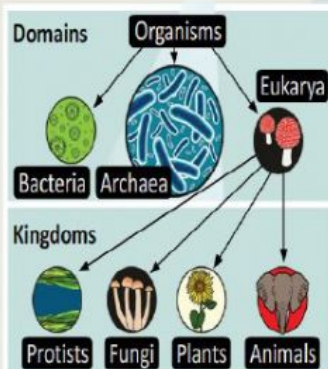
Did all living things on planet Earth evolve from one common ancestor? This is a big question 1)  which ... Carl Woese, an American microbiologist and biophysicist, was curious to answer. However, his research into the subject led 2)  to ... the discovery of far more than just an answer to this question.

Woese was born in New York in the USA on 15th July, 1928. He was fascinated by science from a very young age and wanted to become a

#### Woese C. The universal ancestor (1998)



Last Universal Common Ancestor  
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scientist. He gained a degree in Mathematics and Physics at Amherst College in Massachusetts and had 3)  ... interest in Biology at that time. However, one of Woese's college professors recommended he studied biophysics, so just three years later, aged 24, he graduated with a PhD in Biophysics.

Woese continued his education by studying medicine and carrying 4)  ... research into bacteria, viruses and genetics. He was very interested in the work done 5)  ... two scientists called Linus Pauling and Emile Zuckerkandl who investigated evolution and genetics based on the DNA and RNA of organisms.

At that time, there wasn't an experimental method 6)  ... answer this question. But, this didn't stop Woese – in fact, he created his own. He realised that by analysing and comparing genetic information in the ribosomes of the organisms, he could compare ancestry 7)  ... easily. During his research and experimentation, Woese discovered a whole new domain of life. At first, a lot of other scientists didn't agree with his findings 8)  ... his experimental method. In fact, it took around a decade before his work was widely accepted. His discovery meant that he could redraw the tree of life including the new domain.

For many years, it was widely accepted that life on Earth was split 9)  ... two domains; prokaryotes and eukaryotes. Prokaryotes are organisms with cells that do not contain a nucleus, for example; bacteria. Eukaryotes are organisms with cells that do contain a nucleus, like animals and plants. However, Carl Woese discovered the domain archaea. Archaea are microbes much 10)  ... bacteria, but with a different genetic makeup. At first, people thought archaea only lived in extreme environments like in geothermal springs like those at Yellowstone Park, but actually, you can find Archaea everywhere; 11)  ... the soil in your garden to inside your own digestive system. Unfortunately, scientists still don't know very much about them and still have a 12)  ... to learn.