

Woese wins Crafoord Prize

By Jim Barlow

News Bureau Staff Writer

Microbiologist Carl R. Woese has won the \$500,000 Crafoord Prize in Biosciences given by the Royal Swedish Academy of Sciences. The annual prize, announced Feb. 13, marks accomplishments in scientific fields not covered by the Nobel Prizes in science, which the academy also selects. The king of Sweden will present the prize to Woese Sept. 24 in Stockholm.

Woese was honored for "his discovery of a third domain of life," the academy said. (The academy's news release is accessible on the Web at www.kva.se/KVA_Root/index_eng.asp.)

Woese, the Stanley O. Ikenberry Endowed Chair, changed the way scientists classify life on Earth by his discovery of the archaea.

Woese joined the Illinois faculty in 1964 after working at Yale University (1955-60), General Electric Research Laboratory (1960-63) and the Pasteur Institute in Paris (1962).

In 1977, in collaboration with UI microbiologist Ralph S. Wolfe, Woese overturned one of the major dogmas of biology. Until that time, biologists had taken for granted

that all life on Earth belonged to one of two primary lineages, the eukaryotes (which include animals, plants, fungi and certain unicellular organisms such as paramecia) and the prokaryotes (all remaining microscopic organisms).

Woese and Wolfe showed that there are three primary lineages. Within the prokaryotes, there exist two distinct groups of organisms no more related to one another than they were to eukaryotes.

The new group of organisms – the archaea (pronounced ARE-kee-uh) – is very simple in its genetic makeup and tends to exist in "extreme" environments, niches devoid of oxygen and whose temperatures can be near or above the normal boiling point of water. Such conditions are reminiscent of what is considered to have been the early environment on Earth.

These simple microorganisms offer insights into the nature and evolution of cells, Woese has said. Because of Woese's work, scientists now recognize three primary divisions of living systems, called eukaryotes, archaea and bacteria. The method Woese used to identify this "third form of life," which involved comparing the sequences of a particular molecule central to cellular function, called ribosomal RNA,

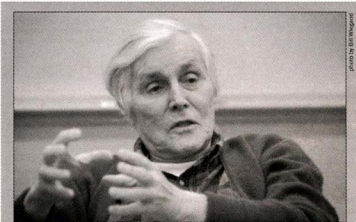


photo by Bill Wiegert

Top honors Microbiologist Carl R. Woese won the \$500,000 Crafoord Prize in Biosciences given by the Royal Swedish Academy of Sciences. Woese was honored for "his discovery of a third domain of life," the academy said.

has become the standard approach used to identify and classify all microorganisms.

In August 1996, Woese and colleagues (UI professor Gary Olsen and researchers from The Institute for Genomic Research) published in the journal *Science* the first complete genome structure of an archaeon. Based on their work on *Methanococcus janaschi*, they concluded that the archaea

are more closely related to humans than to bacteria. "The archaea are related to us, to the eukaryotes; they are descendants of the microorganisms that gave rise to the eukaryotic cell billions of years ago," Woese said at the time.

In a June 1998 issue of the Proceedings of the National Academy of Sciences, SEE **WOESE**, PAGE 4