

# Clues to Evolution From Simple Proteins

How did metabolism – the chemical processes that power life – begin?

To answer that question, primordial proteins called ferredoxins, which support metabolism in bacteria, plants and animals by moving electricity through cells were studied. These proteins have complex forms modern organisms, but researchers speculate they arose from a much simpler protein that was present in ancestral life forms. A reverse-engineered ancestral ferredoxin was inserted into a living bacterium, where it successfully powered the cell's metabolism, growth and reproduction.

The discovery has implications for the field of synthetic biology, which harnesses the metabolism of microbes to produce industrial chemicals and bioelectronics, which seeks to apply cells' natural circuitry for energy storage and other functions.

