

Metalloproteins are responsible for remarkable catalytic conversions such as the splitting of dinitrogen and the fixation of carbon. Here the conformational gymnastics involved in carbon fixation by acetogenic bacteria will be considered. Acetogenic bacteria play an important role in the global carbon cycle by removing carbon dioxide from our environment by fixing it into acetyl-Coenzyme A. In this work, we investigate the structures of the key metalloenzymes involved in acetogenesis, both to gain mechanistic insight as well as to understand the molecular movements that permit these enzymes to act in concert.