

"Chesapeake Bay's electric bacteria"

In aquatic ecosystems, sediments are the final repository for nutrients and organic material that arrive from the landscape or arise from phytoplankton production. In sediments, aerobic and anaerobic microbial communities alter this accumulating material and are ultimately responsible for catalyzing the reactions that lead to most material recycling back to the water column, with the remainder becoming buried over geologic time.

In this talk, I will specifically focus on the sediment microbes that are responsible for removing toxic sulfide that accumulates in marine sediments. We are particularly interested in a novel group of electrically conductive bacteria, so-called "cable bacteria", which grow to cm-scale lengths in sediments and catalyze the oxidation of sulfide by commuting electrons along their longitudinal length. I will present some experiments we have conducted that investigate their unusual biogeochemical role in marine sediments, and then present work that we have recently gathered on their ecology and biogeography in the Chesapeake Bay.