

Screening Environmental Samples for the Presence of Metal-Reducing Bacteria in the Genus *Shewanella*

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Dissimilatory metal reducing bacteria are capable of using extracellular metals as terminal electron acceptors during anaerobic growth. For example, *Shewanella oneidensis* strain MR-1 was isolated from Oneida Lake in New York based on its ability to reduce insoluble manganese dioxide (Mn(IV)O₂) to soluble Mn(II). To determine whether environmental samples contain *Shewanella* species, we developed a polymerase chain reaction (PCR) assay that uses primers developed to amplify only 16S rRNA genes from the genus *Shewanella*. Our PCR assay is specific for *Shewanella*, as it amplifies 16S rRNA genes from *S. oneidensis*, but not from *Escherichia coli*. In addition we have found that this assay is sensitive enough to consistently produce a PCR product from ~10 *S. oneidensis* cells. We are currently using this PCR assay to screen a variety of sediment samples from Oneida Lake and aquatic sediments collected in Rhode Island. We are also developing and testing an anaerobic manganese dioxide reduction assay. We will use this assay to screen environmental samples that are positive for *Shewanella* 16S rRNA genes to determine whether bacteria in these samples are capable of reducing manganese dioxide. These experiments will allow us to begin cataloging the presence of metal reducing bacteria in Rhode Island.