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A genome for bioremediation

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Jonathan B Weitzman

Email: jonathanweitzman@hotmail.com

Metal-ion-reducing bacteria, such as the facultatively aerobic Gram-positive *Shewanella oneidensis*, offer great potential for bioremediation and the elimination of pollutants - for example, uranium and chromium. In an Advanced Online Publication in *Nature Biotechnology*, an international team lead by Claire Fraser and colleagues at *The Institute for Genomic Research* report the sequence of the *S. oneidensis* MR-1 genome (*Nat Biotechnol*, 7 October 2002, DOI:10.1038/nbt749). The genome comprises a circular chromosome of almost 5 megabases encoding 4,758 predicted proteins, half of which could be assigned a biological function. The *S. oneidensis* iteron-type plasmid is 161 kilobases and contains 173 genes. The analysis by Heidelberg *et al.* revealed a 51 kilobase lambda-like phage genome, and the authors speculate that this may be a useful tool for genetic manipulation experiments. They found 39 c-type cytochrome genes, more than in any other sequenced organism, and also identified metal hydrogenases and genes involved in metabolism, electron transport, adaptation to diverse environments and pathogenicity. Insights from the *S. oneidensis* genome will be useful for future bioremediation applications.

References

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