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In order to obtain the energy needed to survive in the absence of oxygen, the bacterium *Shewanella* evolved the ability to use the compounds of several metals, some of which may be toxic to humans and to other organisms. This metal-reducing capability, coupled with the fact that *Shewanella* is not harmful to humans, makes it an ideal candidate for bioremediation of contaminated areas. This research project involves a functional proteomics research program, which includes functional annotation of hypothetical proteins, identification of novel protein complexes, and construction of metabolic pathways. Specifically, the metabolic pathway modeling software, SimPheny, will be used to construct and model specific metabolic pathways of the bacterium *Shewanella*. The results of this study are expected to provide insight into *Shewanella* metabolism under various environmental conditions and to assist in the design of bioremediation programs.

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