

Title: Arsenite Resistance of *Euglena mutabilis*

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*Euglena* are photosynthetic unicellular protozoa. Commonly found in rivers, lakes and ponds, some *Euglena* are found in toxic environments, like areas of acid mine drainage where they can grow at low pH and in the presence of heavy metals and metalloids such as arsenite (e.g. *Euglena mutabilis*). The goal of this research is to determine if an Idaho *Euglena* isolate (*SG6*) belongs to the *E. mutabilis* species and to compare its level of arsenite resistance with other *E. mutabilis* strains. As part of the methodology, we have developed microtiter plate assays in which the cells are grown in liquid or on 1% agar solid media; this allows microscopic observation and direct cell counting. To determine *SG6*'s relation to known *E. mutabilis*, DNA and RNA are isolated to obtain sequence from multiple nuclear and chloroplast genes. Lastly, as preliminary experiments suggest, if *SG6* represents a new strain of *E. mutabilis* that is abnormally sensitive to arsenite, we will test for the ability of *SG6* to gradually adapt to a more toxic environment and become arsenite resistant.

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