Title: Arsenite Resistance of *Euglena mutabilis*

Authors: Nicole L. Rosendo Mercado and Doug G. Cole, Ph.D.

*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 it’s 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.

This work was partially funded by the National Science Foundation REU Site award DBI 1460696.