

**Kimberly Proenca, Juniata College.** Understanding freshwater Brown Algae using molecular and culture based methods. Mentor: Ms. Xian Wang, Dr. Wehr and Dr. Ken Karol

Abstract: Brown algae are found to exist in marine, brackish and freshwater environments. The freshwater population is significantly smaller than the marine population. The taxonomy of freshwater brown algae is unclear because of the lack of research on this group. The purpose of this study was to gather more information on these species and answer some taxonomic questions. This project consisted of two parts, a molecular phylogeny study of populations of *Pleurocladia lacustris* and a sporangia observation of *Heribaudiella fluviatilis* in different media. Samples of *Pleurocladia lacustris* were collected from California and one strain from Austria were purchased from algal collection. The DNA from these samples were extracted, amplified, sequenced and aligned to generate phylogenetic trees. The resulting trees indicated that *Pleurocladia lacustris* from California and Austria are not phylogenetically different from each other. In the second part of the project, *Heribaudiella fluviatilis* from Europe and North America were manipulated and observed periodically. They have proven to be genetically different but morphologically similar. The purpose of this section of the project is to investigate the possibility of any morphological differences that may have not been aware of. Two replicates of each sample were kept in four different media with a variety of salinities. They were observed weekly for five weeks. No significant results were seen during the short period of time. A longer study time along with a more frequent observation schedule may be needed for future studies.