

**Unique genetic markers to monitor protist populations in the environment.** Intern: Deidre McAteer Frontline Mentor: Pete Kahn

The 18S and 28S rRNA genes are highly conserved in eukaryotes and are important taxonomic markers to determine the phylogenetic position of a protist species. Within the 28S gene is a site of entirely unique sequences between 300-450 bp in length, which are found in diverse eukaryotic microbes (flagellates, dinoflagellates, and possibly diatoms and fungi). A dinoflagellate of the genus *Euduboscquella*, which has been found in elevated numbers within Mesodinium bloom red water samples, possesses one of these unique sequence elements (USE). Members of *Euduboscquella* are ciliate parasites and its presence in the ciliate red water bloom is suggestive of a role in bloom dynamics. Deidre will utilize DNA probes derived from the *Euduboscquella* USE for PCR and FISH (fluorescent in situ hybridization) analysis to determine the spatial and temporal distribution of the Columbia River estuary strain of *Euduboscquella* that is defined by its USE DNA. FISH analysis will also be applied to determine if the dinoflagellate is found within ciliate hosts.