ORAL PRESENTATION
APPLIED LABORATORY EXPERIMENTS IN DIATOM ECOPHYSIOLOGY: WHICH IS MORE IMPORTANT, THE QUESTION OR THE ANSWER?

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In a recent study, (Wee et al. 2016, J Appl Phycol 28:3317-29) clonal *Skeletonema costatum* cultures were used to investigate phytoplankton responses to human-induced, petrochemical contamination. The laboratory-based experiments were designed to emulate a single watershed, the Lake Pontchartrain Basin (LPB). Population growth and relative abundances of both cellular fatty acids and RuBisCO RNA transcript copy numbers were evaluated in cultures exposed to light slop oil. Of the oil contaminants measured within the culture medium C_6-C_{12} hydrocarbons and arsenic coincided with initial growth inhibition and altered cellular physiologies, respectively. From this, relationships among population growth, food reserves, and photosynthetic potentials were deemed useful determinants for assessing phytoplankton response. During the course of the investigation a number of procedural factors were identified that ran counter to those often used in microalgal, laboratory culture experiments including: experimental design reflects a perturbed, naturally-occurring system; sealed vs unsealed culture vessels, batch vs chemostat cultures, axenic vs clonal cultures, optical turbidity vs chlorophyll fluorescence as a measure of population growth, enrichment vs defined culture media, experimental control of a complex mixture such as crude oil. The decision concerning which option to use often corresponded with the nature of the scientific question being addressed; were the results being interpreted relative to: (1) the response of a population of cells to an environmental perturbation or (2) the response of the cellular components and biochemical processes to the perturbation in the experimental system? Further, the authors hypothesize that a defined growth medium that emulates the abiotic signature of the LPB would strengthen the experimental approach described here where an enrichment culture medium (f/2) was used. To assess whether this is a viable option for future studies we present cellular growth rates of *S. costatum* populations in f/2 media to a recently constructed, defined diatom culture medium based on the ionic proportions of Lake Pontchartrain Basin waters.