

Data Management Plan

As described in the main body of the proposal, the data obtained during the proposed project will consist mainly of records of picoplankton group-specific organic substrates (^{14}C -glucose, L- ^{35}S -methionine, and $[\gamma\text{-}^{33}\text{P}]\text{ATP}$) uptake in axenic cultures and field open ocean samples. These records will consist of (1) assays of radioactivity in the flow cytometry sorted plankton groups of interest (here mainly *Prochlorococcus*, *Synechococcus* and *Crocospaera*, but also UCYN-A and heterotrophic bacteria), (2) microautoradiography combined with catalyzed reporter deposition fluorescence in situ hybridization (MAR-CARD-FISH) to assess the fraction of the total groups of cyanobacteria that are actively assimilating the radioactive organic substrates (3) characterization, enumeration, growth and biomass estimates of cyanobacteria under different environmental (light and nutrient) conditions and (4) diel variations in the expression of two genes involved in glucose metabolisms (encoding a glucose-6-phosphate dehydrogenase, and a glucokinase, respectively) and in nitrogen fixation (*nifH*) in cultures samples of *Crocospaera watsonii* WH8501. Collectively the data generated from this study will quantify the effect of light and nutrient concentration on organic carbon and nutrient uptake needed to better understand unicellular cyanobacteria ecological advantages to photoheterotrophy.

The experimental data originally recorded on physical paper datasheets will be regularly recorded manually in spreadsheet software, with essential metadata present in the header in the relevant electronic files, or included along with the indexed laboratory notebook narrative. The computer-generated data will be in tab-limited text files. The radioactivity data will be computer files generally as spreadsheets with header information. These computer files will be accompanied by dated laboratory notebooks. Paper copies will be kept on file for at least 10 years. The electronic data will be preserved in multiple on-site backups in the form of DVDs and hard drive storage. Original laboratory notebooks will be secured by the PIs in their respective campus offices or laboratories. Figures will be generated from commercial plotting software.

These data will provide an experimental look at the pathways of carbon, nitrogen and phosphorus through the microbial food web. As such, they will be of interest to the oceanographic community, and have implications for the climate change community. Data will be submitted to the Biological and Chemical Oceanography Data Management Office (BCO-DMO) as soon as is reasonably possible, and no longer than two years after its acquisition. The data will be preserved for at least three years beyond the award period, as required by NSF guidelines. Primer sets sequences that will be designed in this study will be deposited in GenBank.

This project will not involve the acquisition of either animal or human subjects data.

All members of the investigative team will receive instruction in the Responsible Conduct of Research (RCR), which will include CITI training and additional training onsite.

We do not anticipate that there will be any significant intellectual property issues involved with the acquisition of the data. In the event that discoveries or inventions are made in direct connection with this data, access to the data will be granted upon request once appropriate invention disclosures and/or provisional patent filings are made.

The data acquired and preserved in the context of this proposal will be further governed by the policies at the PI university (LDEO/CU), pertaining to intellectual property, record retention, and data management.