

## GROWTH OF DIATOM CULTURES UNDER DIFFERENT IN-VITRO CONDITIONS

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Cultured diatoms are valuable model systems, but locally and regionally common or new to sciences taxa are unavailable in commercial culture collections. Samples from different habitats in Georgia were used for cell isolations. Diatom species were collected from brackish waters along the banks of the Savannah River, Georgia. Freshwater communities were collected from Lake Sinclair, Georgia either from natural habitats (water column, vegetation, and sediment), or grown on a diatometer placed in the lake. In the lab, natural chemical compositions of waters from different sources were recreated. Brackish filtered water was used from the Savannah River location and Bold's Basal freshwater medium was prepared following recipe. Soil nutrients were extracted and used to infuse proper nutrients in the lab media for growth and reproduction. Diatoms were allowed to grow in different vial sizes with and without agitation along with the use of agar plates. All inoculated vials and petri dishes were then placed in an incubator under standard conditions (14:10 h light, 17°C temperature, and 90% humidity) and then checked every two days for growth. Over a 4 week period of time, both vials and petri dishes have shown growth of cultured algae. Preliminary data shows that diatoms grew better on agar substrate compared to liquid medium; this was true for both benthic and planktonic diatoms. Plastic versus glass vials and petri dishes did not show significant difference in growth, implying that our medium had enough Si available. Growth and reproduction were estimated by using a light microscope, where samples were analyzed. The freshwater sample from the diatometer in Lake Sinclair was easier to culture, because of the lower species diversity. From both brackish and freshwater samples, there were around 23 different species observed where 42% were attempted at culturing. Eleven different diatom species have been identified and grew successfully from both brackish and freshwater samples. Potentially new to science and common representatives of the genera *Achnantheidium*, *Cymbella*, *Gomphonema* and *Navicula*, together with *Melosira varians* thrived in freshwater artificial environment and representatives of the genera *Terpsinoë* and *Hydrosera*, grew successfully in brackish recreated conditions. Documenting growth and reproduction in artificial environments was an important part of the several collaborative molecular, physiological, and ecological projects in the lab.