

Jennifer Sneed

Regulation of the microbial community by the green alga *Dictyosphaeria ocellata*

Bacteria are highly abundant in seawater and play important ecological roles within marine communities. Bacteria associated with macroalgae have a great impact on both the health of the algae and interactions with other organisms, acting as pathogens, symbionts, mediators of the settlement of fouling organisms, nutrient providers and consumers, etc... Studies of temperate macroalgae indicate that these sessile organisms have evolved mechanisms to regulate the bacterial community surrounding them. The tropical green alga *Dictyosphaeria ocellata* was chosen as a model species to examine the regulation of bacterial communities by tropical algae because it is found in intertidal zones where the water contains a heavy bacterial load and yet remains largely unfouled. It is also a species that has not been previously chemically investigated. The effects of *D. ocellata* on natural planktonic and surface associated microbial communities were examined in the field and analyzed using denaturing gradient gel electrophoresis. Initial results indicate that *D. ocellata* regulates the planktonic bacterial community surrounding it, but not the community on its surface. Further work is being done to determine the mechanisms involved in this interaction. In addition, the effects of *D. ocellata* on the growth of individual bacterial species were investigated in laboratory co-culture experiments. It was found that *D. ocellata* affected the growth of individual bacterial species differently, supporting the findings of previous field experiments. Investigation of the mechanisms involved in these interactions indicates that in some cases inhibitory effects can be attributed to compounds released into the water and in others by compounds found within the alga. Further investigation of these mechanisms is underway.

Supervisor

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