

## Dr. Sarah Princiotta

**Professor Tenure-Line  
Biology**

**Title of your research project.**

Predator-prey interactions in a green microbial world

**Description of research. Please provide a few sentences that explain the question and the methods employed in this research project.**

Lakes are ecologically and economically important sources of biodiversity that provide an array of ecosystem services. However, proliferations of cyanobacteria, or blue-green algae, are a major threat to water quality on a global scale. Though cyanobacteria are a natural feature of the planktonic community, massive bloom events are exacerbated by anthropogenic activities such as excessive nutrient loading. Toxin production associated with cyanobacteria blooms have garnered attention in the public health realm, as wildlife mortality and human illness have been linked to contact with impaired waterways. To date, much attention has been directed towards abiotic controls of cyanotoxin production through reduction of nutrient input from run-off. However, there is compelling evidence that biotic interactions within the aquatic community may govern the formation and subsequent decay of cyanobacteria blooms. The shortage of information regarding the underlying mechanisms of cyanotoxin production highlight the need for a characterization of biotic regulation of bloom formation. The general objective of this work is to assess and characterize the ability of protistan taxa to provide top-down biological control on cyanobacteria blooms, particularly through biodegradation of cyanotoxins. This is approached through a series of laboratory experiments with aquatic microbes in culture in combination with techniques in microscopy and analytical chemistry.

**Did this project include Penn State students as researchers?**

No

**If yes to the above question, please state where it was published.**

n/a

**What problem do you address with your research?**

The shortage of information regarding the underlying mechanisms of cyanotoxin production highlight the need for a characterization of biotic regulation of bloom formation. Results of

this work will contribute to an understanding of harmful algal boom dynamics that is applicable to ecosystems across the globe.