**Research Project Title:** ATX-producer dominated cyanobacterial community structure, succession and qPCR-based early warning of cyanotoxin production

**Project Overview:**

Problem:

Public concern over cyanobacterial blooms has increased due to their higher frequency of occurrences and their potential ecological and health impacts.

2) Cyanobacteria are becoming a focus for their cyanotoxin production in freshwater ecosystems. Preventing cyanotoxin production is essential to protect aquatic ecosystems and public health. However, the information of prediction of cyanobacterial bloom (HCB) is limited.

Objectives:

This study was to provide detected cyanotoxin-encoding genes as biomarkers to predict cyanotoxin production.

Research Approach:

Weekly samples were collected in Anderson Lake, WA, in the three HAB seasons (2019, 2021 and 2022). Cyanobacterial community and toxic cyanobacterial compositions were characterized using sequence analysis, variations of toxic cyanobacteria were monitored using qPCR, and their early warning of cyanotoxins were conducted using qPCR and RT-qPCR.

Scope and Significance:

OW, regional offices, scientists and water quality managers could be interested in these datasets.

References:

Lu, Jingrang, Ian Struewing, Larry Wymer, Daniel R Tettenhorst, Jody Shoemaker, and Joel Allen. 2020. “Use of QPCR and RT-QPCR for Monitoring Variations of Microcystin Producers and as an Early Warning System to Predict Toxin Production in an Ohio Inland Lake.” Water Research 170: 115262. https://doi.org/https://doi.org/10.1016/j.watres.2019.115262.