

Using Lake Erie Bacteria to Remove Microcystin from Drinking Water

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Some bacteria have the ability to degrade the microcystin toxin MC-LR into non-toxic component parts, including bacteria naturally found in Lake Erie. A previous HABRI project isolated and identified groups of these bacteria, which are now being examined at the genetic level to potentially produce enzymes that can be used in water treatment plants.

Dr. Jason Huntley and his research group had hoped to find already known MC-LR degradation genes, based on studies from Australia, Japan and China. However, those genes were nowhere to be found in Lake Erie bacteria, so new genetic pathways have to be identified.

Current work focuses on using next generation genomic sequencing technology to examine the genetic information from these bacteria in the presence and absence of MC-LR. The toxin triggers an increase in the production of enzymes that attack it, so a gene that is observed in a higher number of copies when MC-LR is present is a likely candidate for further use. Huntley and his group have partnered with investigators at a number of Ohio universities to achieve these results, including the University of Toledo, Bowling Green State University, The Ohio State University and Kent State University.



Above: Lake Erie bacteria that can degrade microcystin may soon become the next technology water treatment plants can employ to remove the toxin from drinking water.

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