



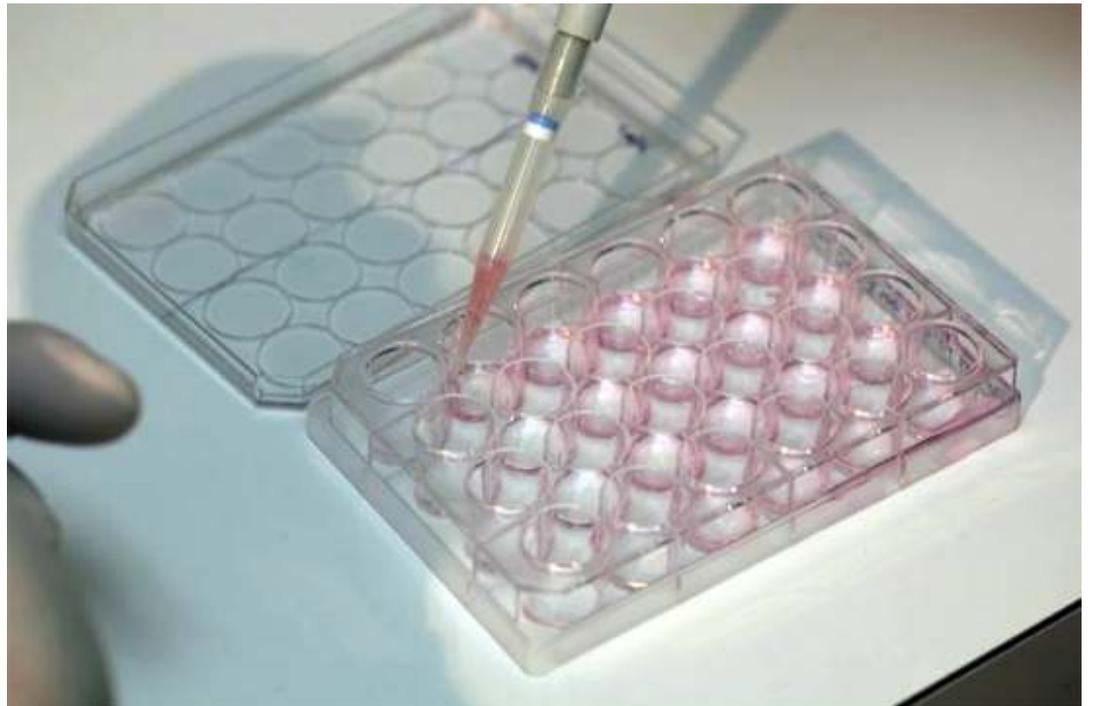
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New DNA tech offers insight into water pollution

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DNA sequencing of water and wastewater could provide more detailed information on bacterial contamination and water pollution than existing tools, US researchers have found.

Wisconsin-based biotechnology firm [Microbe Detectives](#) has developed a tool they said could be part of the solution to bacterial contamination in water and wastewater.



“[DNA sequencing is a new tool](#) for microbiology that provides much more information than conventional culturing tools such as coliform testing,” said [Microbe Detectives’ CEO John Tillotson](#).

“DNA sequencing can identify and quantify nearly all of the microbes in a sample, whereas culturing or even polymerase chain reaction (PCR) based methods are limited to detecting one or a small number of target organisms.

“In fact, scientists estimate that only about 1% of bacteria in a sample will grow in typical culture conditions.”

The process used for extracting DNA includes PCR amplification, library preparation, bioinformatics and data analysis.

Each individual DNA strand that is generated gives a combination of letters that can be millions of characters long, president and CEO of LuminUltra Pat Whelan said. The company partnered with Microbe Detectives to develop the DNA sequencing tool.

“Those sequences are then referenced against a database to determine from what organism the sequence came and in what general proportion that sequence is present,” he said.

“Once all that data has been compiled, a report is generated indicating what microorganisms are there and at what percentage levels of the total population.”

For drinking water operations, DNA sequencing applications include distribution system nitrification and backflow problems, taste and odour issues, and clarification on positive coliform tests.

When it comes to wastewater, the company said the technology could be helpful in dealing with nitrification, phosphorus removal, foaming, filaments, bulking and poor settling, positive coliform tests and anaerobic digester gas production.

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