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USU microbiologist to study bacteria in Great Salt Lake

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A Utah State University microbiologist's newly funded research on the Great Salt Lake could uncover a solution to global climate change, provide insight about life on other planets and reveal ways to reduce the lake's pollution.

The Department of Energy Joint Genome Institute recently approved a $4.5 million grant for the study, which is focused on unique bacteria found in the lake. Bart Weimer, director of USU's Center for Integrated BioSystems, is leading the project.

"It's exciting," Weimer said. "We believe we're going to find new enzymes and new metabolic routes that have never been seen before. ... One of our goals is to understand the (lake's) microbial diversity. The diversity is a lot greater than people had anticipated."

According to Weimer, the lake contains more than 1,000 different kinds of bacteria. The salty water favors types that are similar to plants, absorbing carbon dioxide and generating oxygen.

As a result, large amounts of these bacteria might reduce carbon dioxide in the atmosphere and slow climate change, he said.

Many scientists believe the planet's warming trend is caused by the gas, which is produced when fossil fuels are burned.

"What we're trying to do is take a natural resource in the state and direct it toward something that is a global issue," Weimer explained.

If his research shows the method is effective, Weimer predicts the bacteria could be cultivated worldwide in salty manmade lakes.

The Great Salt Lake is the third saltiest body of water on earth, but the saltiest to support life. On average, the lake is about four times saltier than the ocean, and in the northern section, up to 20 times saltier.

Many of its microorganisms have not been studied because less than 1 percent of them can be grown in labs.

Weimer's research gets around this problem by examining the bacteria through DNA collected from the water and soil.

Some of the bacteria might also be similar to life on other planets like Mars, which has salty water.

"We have sent a proposal to NASA to see if the Great Salt Lake would be a model for other lifeforms," Weimer said.

In addition to high salt, the lake contains sulfate concentrations that give it a distinctive rotten-egg stink. Pollutants like selenium and mercury are also present, yet the lake still supports brine shrimp, several kinds of algae and 5,000,000 migrating birds.

Weimer said that he hopes his investigation will find ways to lower the toxins in the water.

Other key researchers on the project include Jacob Parnell and Giovanni Rompato from USU, along with scientists at the University of Utah, the U.S. Geological Survey and the Utah Division of Water Quality.

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