New link could battle greenhouse gas emissions

July 30 2013

The discovery of a new form of microbial life that can consume the potent greenhouse gas methane has earned University of Queensland (UQ) researchers a place in the prestigious journal *Nature*.

The research and the *Nature* article are the results of collaboration between UQ's Advanced Water Management Centre (AWMC) and the Australian Centre for Ecogenomics.

The newly discovered microbial process turns methane into carbon dioxide while breathing nitrate instead of oxygen.

Advanced Water Management Centre Deputy Director Professor Zhiguo Yuan, a lead researcher on the project, said the previously unrecognised metabolism formed a new link between the global nitrogen and carbon cycles.

"This finding could potentially play an important role in the regulation of emissions of methane, a strong greenhouse gas, from aquatic environments to atmosphere, and also has great potential to revolutionise biological wastewater treatment," Professor Yuan said.

UQ's research group, led by Professor Yuan and Dr Gene Tyson, has sequenced the genome of this novel micro-organism.

"Given the simultaneous presence of methane and nitrate in many aquatic environments, we believe this micro-organism could consume

vast amounts of methane, preventing it from reaching the atmosphere," Dr Tyson said.

Advanced Water Management Centre Director Professor Jurg Keller said publication of the team's research in *Nature* was recognition of years of research.

"This research benefited from this multi-disciplinary approach and the close collaboration between process engineers and scientists," Professor Keller said.

More information: www.nature.com/nature/journal/ … ull/nature12375.html

Provided by University of Queensland