

# Bacteria breakthrough for safer food

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Screening for bacteria just got speedier.

(Phys.org)—Chicken meat and other foods will be able to be screened for bacteria even faster and more effectively than ever, thanks to breakthrough nanobiotechnology research.

A team of scientists from The University of Queensland (UQ) and the Department of Agriculture, Fisheries and Forestry (DAFF) will leverage this [new technology](#) which enables DNA amplification on "[microspheres](#)" to rapidly detect and identify large numbers of different [bacteria](#) at once.

Professor Ross Barnard, Director of the Biotechnology Program at the UQ School of [Chemistry](#) & Molecular Biosciences, said that authorities have estimated that there are around 5.4 million cases of food-borne gastroenteritis in Australia every year. Of these cases, it is estimated that around 200,000 are associated with the bacteria *Campylobacter jejuni* and *Campylobacter coli*.

"We hope to use this new technology to be able to detect and type *C. jejuni/coli*. These quick identification techniques can underpin relevant and sustainable programs to further improve food safety," he said.

"The infectious dose for *C. jejuni/coli* can be very low – around 500 organisms. This means that sensitive, specific and rapid techniques are particularly important for this organism" said Professor Barnard.

He said while testing methods do exist, they had been slow and less effective, so many scientists had turned their focus to leveraging existing "microsphere" technology to a new level.

"After five years, we are now able to extend and develop the platform in ways that haven't been done before," Professor Barnard said.

"We will now be able to carry out many typing reactions at once by doing a very large number of [DNA amplification](#) reactions at the same time on the surface of the [microspheres](#)."

The continuing research will be sponsored by the Poultry CRC (Cooperative Research Centre) and carried out by UQ PhD student Mr Liang Fang, who is working on an International Postgraduate Research/UQ Centenary Scholarship, alongside Dr Pat Blackall (Queensland Alliance for Agriculture and Food Innovation) and Ms Jillian Templeton at DAFF.

The discovery was the result of five years of intensive research and the full scale of the benefits is yet to be known.

"This is just the beginning. Because this testing is based on a platform technology it can be applied in many different ways, such as mutation screening in plant, animal and human genomes, as well as for applications in the realm of infectious diseases," said Professor Barnard.

The discovery has attracted global interest featuring this month on the front cover of the respected international journal *Analytical Biochemistry* and has resulted in an invitation to present the work at the Luminex International Diagnostics Forum in Monaco.

This development adds to a growing list of UQ research successes that have the potential to benefit humankind which includes the needle-free injection Nanopatch technology, the development of vaccines to suppress rheumatoid arthritis, and the creation of the cervical cancer vaccine, Gardasil.

Provided by University of Queensland

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