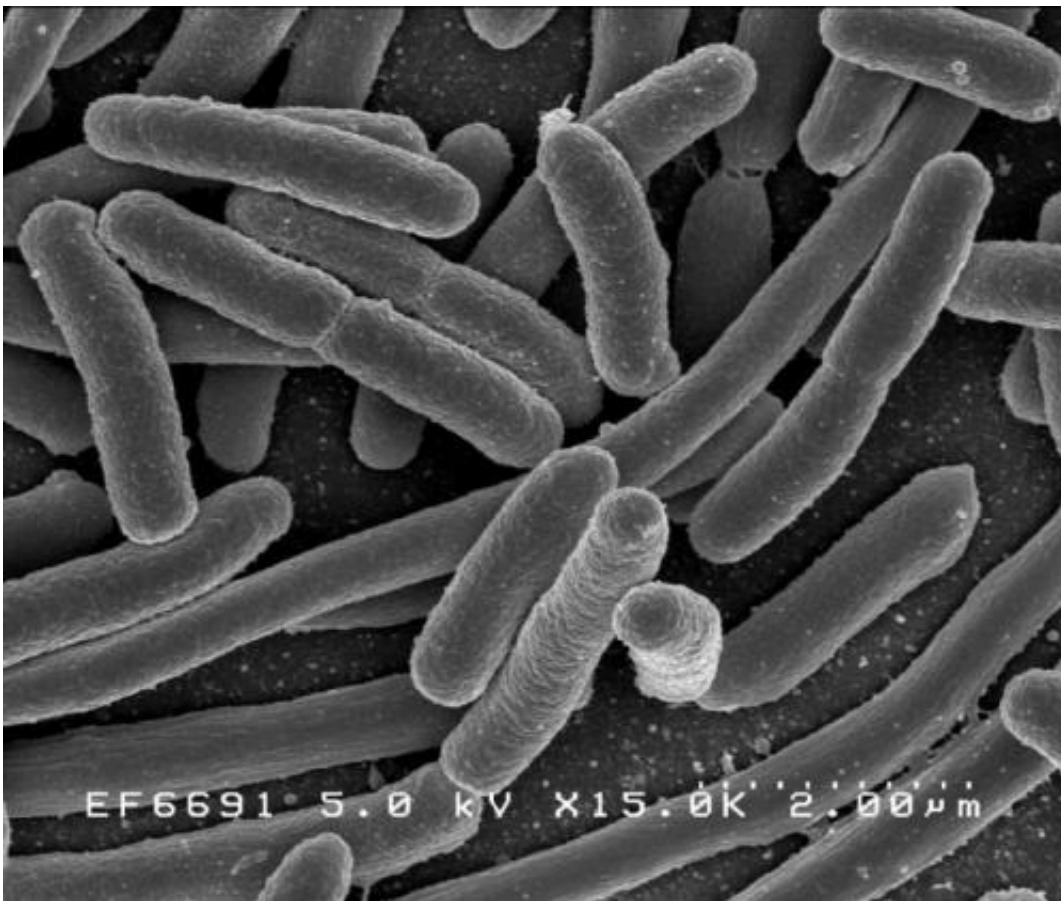


# Hospital superbugs breakthrough: Antibacterial gel kills them using natural proteins

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*Escherichia coli*. Credit: Rocky Mountain Laboratories, NIAID, NIH

Scientists at Queen's University Belfast have made a breakthrough in the

fight against the most resistant hospital superbugs.

The team from the School of Pharmacy at Queen's have developed the first innovative antibacterial gel that acts to kill *Pseudomonas aeruginosa*, *staphylococci* and *E. coli* using natural proteins.

The [gels](#) have the ability to break down the thick jelly-like coating, known as biofilms, which cover bacteria making them highly resistant to current therapies, while leaving healthy cells unaffected.

Dr Garry Laverty, from the School of Pharmacy at Queen's University, and lead researcher, said: "When bacteria attach to surfaces, including medical implants such as hip replacements and catheters, they produce a jelly-like substance called the biofilm. This protective layer is almost impossible for current antibiotics to penetrate through. Therefore bacteria deep within this protective layer are resistant as they remain unexposed to the therapy. They grow and thrive on surfaces to cause infections that are very difficult to treat. The only option is often to remove the medical implant leading to further pain and discomfort for the patient. Our gels would prevent this.

"Our gels are unique as they target and kill the most resistant forms of hospital [superbugs](#). It involves the use of gels composed of the building blocks of natural proteins, called peptides. The same ingredients that form human tissue. These molecules are modified slightly in the laboratory to allow them to form gels that will rapidly kill bacteria. This is further evidence of Queen's research advancing knowledge and changing lives."

The new approach, which was developed as part of an international collaboration between the School of Pharmacy at Queen's and the School of Chemistry at Brandeis University, Waltham, USA, is published in the journal *Biomacromolecules* next month.

The results will form part of a presentation delivered by Dr Lavery at the Academy of Pharmaceutical Sciences, UK PharmSci: The Science of Medicines conference at the University of Hertfordshire on the 8th September 2014.

**More information:** *Biomacromolecules*,  
[pubs.acs.org/doi/abs/10.1021/bm500981y](https://pubs.acs.org/doi/abs/10.1021/bm500981y)

Provided by Queen's University Belfast

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