

Shining a light on disease -- tracking light-emitting bacteria during infection

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By attaching light-emitting genes to infectious bacteria in an experimental system, researchers at University College, Cork, Ireland, have been able to track where in the body the bacteria go - giving an insight into the path of the infection process leading to the development of more targeted treatments.

At the Society for General Microbiology's meeting at Heriot-Watt University, Edinburgh, Dr Cormac Gahan described how his research team had manipulated the infectious food-borne pathogen *Listeria monocytogenes* to emit enough light for an ultra-sensitive camera system to detect these [bacteria](#) during [infection](#) of living mice in real time. This non-invasive procedure allowed individual animals to be analysed over the course of a lengthy infection and therefore reduced the numbers of animals required for infection studies.

This [bioluminescence](#) technology showed the researchers that *Listeria* bacteria migrated to the kidneys and gall bladders of normal mice during infection. In mice with cancer, the bacterium migrated very efficiently to the tumour tissue. The team went on to investigate the possibility that *Listeria* could be used to kill tumour cells by delivering DNA containing the codes for proteins to kill the tumour.

"Bioluminescence imaging in bacterial infections has great potential to provide information on the cause of infectious diseases," said Dr Gahan, "The technology allows the researcher to pinpoint exactly where in the body the bacteria reside during infection. We have also demonstrated

that the technology can indicate which bacterial genes are switched on during infection. The use of this approach will underpin the development and testing of new vaccine and DNA-delivery vectors for protection against bacterial diseases."

Source: Society for General Microbiology

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