In the news

BACTERIOTHERAPY TRIUMPHS

A new study published in *PLoS Pathogens* reports that faecal transplantation can cure relapsing *Clostridium difficile* infection in mice.

The bacterium *C. difficile* is notorious in hospital settings as a major cause of severe diarrhoea and "was a contributing factor to more than 2000 deaths in the UK in 2011" (*Wellcome Trust*, 26 Oct 2012). The pathogen is harmless when its levels are kept low in the gut, but it can cause chronic intestinal dysbiosis if it becomes dominant following perturbation of the gut microbiota with antibiotics.

Researchers at the Wellcome Trust Sanger Institute, London, UK, found that an epidemic strain of *C. difficile* caused persistent dysbiosis in mice, which relapsed after vancomycin treatment. By contrast, oral administration of faeces from healthy donor mice displaced the pathogen and re-established a healthy microbiota. The team went on to determine that a combination of six phylogenetically diverse bacteria, including three novel species, was responsible for resolving the disease.

Trevor Lawley, lead author of the study, commented that "It is quite intuitive to aim for more balanced gut ecosystems" (*BBC News*, 25 Oct 2012), and senior author Gordon Dougan stated that the results "open the way to reduce the over-use of antibiotic treatment" (*ScienceDaily*, 25 Oct 2012). However, microbiologist Neil Fairweather (Imperial College London) warned of the problems associated with the approach, such as the risk of transferring harmful infections, but he also agreed that "bacteriotherapy could have promise" for the treatment of dysbiotic conditions (*BBC News*, 25 Oct 2012).

Despite the controversial nature of this treatment, these findings affirm the therapeutic potential of faecal transplantation and provide compelling motivation for similar studies in humans.

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