

Possum poo study sheds light on human epidemics

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Credit: Dr Sam Banks

A new study of the way bacteria spread amongst possums could shed light on the spread of human epidemics.

Scientists from The Australian National University studied *E. coli* in mountain brushtail possums, and found that the bacteria were transmitted in surprising patterns.

"Even though possums are curled up together all day, daytime den sharing was not as important for the spread of E.coli as night time encounters while out foraging," said lead researcher Dr Michaela Blyton, from the ANU Research School of Biology.

"This suggests that it's not just how much time you spend together that's important, it's what you are doing during that time."

E. coli is a widely studied bacterium that occurs in most warm blooded animals. In most cases it is not harmful. However, it can cause human illnesses such as gastroenteritis through [virulent strains](#) or if usually benign strains get into the wrong part of the body.

Dr Blyton's study, published in *Ecology Letters*, found that interactions between possums were more important than home range proximity for transmitting E.coli .

"E. coli is usually thought of as an environmental pathogen, spread through faecal contamination of water, soil or food," said Dr Blyton. "But this is like 'hang on, maybe there is another route for infection'."

Dr Blyton said 106 strains of E. coli were found amongst the 50-odd possums studied, which made it possible to distinguish the individual transmission routes.

"For most other pathogens so few individuals have the disease that it's very hard to tell the transmission patterns, unless it is an epidemic," she said.

"However, E. coli's prevalence amongst the possums allowed a network map of the bacteria's spread to be developed.

"Data of this type gives a powerful predictive framework for modelling

disease spread."

Dr Blyton tracked the possums' interactions with smart collars, which recorded when two possums came within three metres of each other. Radio transmitters on the collars allowed scientists to find the location of the [possums](#)' dens up to 60 metres off the ground in the high mountain ash forests of the Victorian Alps.

"Knowing the transmission route changes how we model pathogen spread in humans and between livestock and wild animals, which can be important for controlling disease," she said.

More information: Michaela D.J. Blyton, et al. "Not all types of host contacts are equal when it comes to E. coli transmission." *Ecology Letters*, Article first published online: 25 MAY 2014.

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Provided by Australian National University

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