

Biodiverse soil dust linked to reduced anxiety

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Researchers from the University of Adelaide have found new evidence of a potentially broadly-acting microbial link between the health of ecosystems and the health of people.

Published in *Science of the Total Environment*, the research investigated

the relationship between exposure to biodiverse soil dust, gut [health](#) and mental health.

Growing evidence links natural green space exposure with a range of health benefits, including for mental health.

Conversely, greater urbanisation is associated with increased risk of mental health disorders.

Microbiomes are proposed as an important but understudied link that may help explain many green space-human health associations.

Previous mouse-model studies have used unrealistic environmental microbial exposures to demonstrate the potential relationship.

This randomised, controlled study demonstrated that realistic exposures to trace-level dust from a high biodiversity soil can change mouse gut microbiota, and that the inclusion of a rare organism—*butyrate-producer* *Kineothrix alysoides*—correlated with reduced anxiety-like behaviour in the most anxious mice.

Lead author Craig Liddicoat, a Ph.D. researcher from the University of Adelaide's School of Biological Sciences, said the research was a significant step forward in showing that airborne [exposure](#) to natural biodiversity can influence the gut microbiome and, therefore, our health.

"We also found early evidence of a potentially broadly-acting microbial link between biodiverse environments, soil, gut health and [mental health](#)," he said.

"The new mechanism we propose may help explain many of the beneficial green space-human health associations that, until now, have lacked mechanistic understanding.

"This work strengthens the argument for conserving and restoring biodiverse green space in our cities.

"With biodiverse urban green space, that promotes the right kind of microbial exposures, we have potential for public health gains, while supporting our biodiversity at the same time."

More information: Craig Liddicoat et al. Naturally-diverse airborne environmental microbial exposures modulate the gut microbiome and may provide anxiolytic benefits in mice, *Science of The Total Environment* (2019). [DOI: 10.1016/j.scitotenv.2019.134684](https://doi.org/10.1016/j.scitotenv.2019.134684)

Provided by University of Adelaide

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