

Treating generational stress—are probiotics the answer?

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For the first time, Australian researchers have found a link between a father's stress levels and learning and memory ability in his offspring and that these negative effects can be reversed by probiotics.

The researchers say the discovery in rats opens the way for research into

the clinical effectiveness of probiotics for the treatment of stress-related emotional health problems in children.

The UNSW research, published in the journal *Psychological Science*, revealed two novel findings related to the emergence and treatment of the generational effects of stress.

In the study, male rats were exposed to stressful periods of maternal separation early in life. After the male rats reproduced, the researchers found their male offspring had longer lasting and stronger fear memories as infants.

UNSW PhD student and co-lead author Caitlin Cowan said the strong fear memories were not seen in the offspring of fathers that had a normal upbringing.

"We assessed fear memory during infancy, which is important because behavioural changes can be early warning signs that are a useful target for intervention," Ms Cowan said.

Other research has shown that the inability to suppress fear memories following exposure therapy may be a factor in the maladaptive expression of fear in anxiety, trauma, or stress-related disorders.

The researchers' second finding was that probiotics can protect against these generational 'stress effects'.

"We demonstrated the effectiveness of this particular probiotic both as an active treatment when administered to infant rats and as a preventative treatment when administered to fathers before conception," Ms Cowan said.

The probiotic was composed of 95% *Lactobacillus rhamnosus* and 5%

Lactobacillus helveticus.

Study senior author Professor Rick Richardson, from UNSW's School of Psychology, said the findings suggest the probiotics' mechanism of action may be linked with the dampening of stress activated hormones and pro-inflammatory immune-signalling pathways.

"While the mechanism of action is yet to be fully understood, the ease of administration, minimal risk, low cost, and general public acceptance of [probiotics](#) make them an ideal candidate to investigate as a first line of defence against stress-induced vulnerabilities," Professor Richardson said.

"The fact that early life adversity is often linked with poor nutrition and gastrointestinal problems further strengthens the case for probiotic interventions in stress and mental illness.

"There is an increasing awareness of the important role the gut plays in mental health, and this work represents an exciting example of how clinical neuroscience research may lead to new, more effective treatments for psychological disorders."

More information: Bridget L. Callaghan et al. Treating Generational Stress, *Psychological Science* (2016). [DOI: 10.1177/0956797616653103](https://doi.org/10.1177/0956797616653103)

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