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<b>REPORTER:</b>	<b>Amina Abdul Salam</b>

### Depressive behaviour linked to microbes in the gut

**ANXIETY** and depression could be linked to the presence of bacteria in the intestines, scientists have found.

A study on laboratory mice has shown that anxious and depressive behaviour brought on by exposure to stress in early life appears only to be triggered if microbes are present in the gut.

The study, published in *Nature Communications*, demonstrates a clear link between gut microbiota – the microbes living naturally in the intestines – and the triggering of the behavioural signs of stress, according to *the independent*.

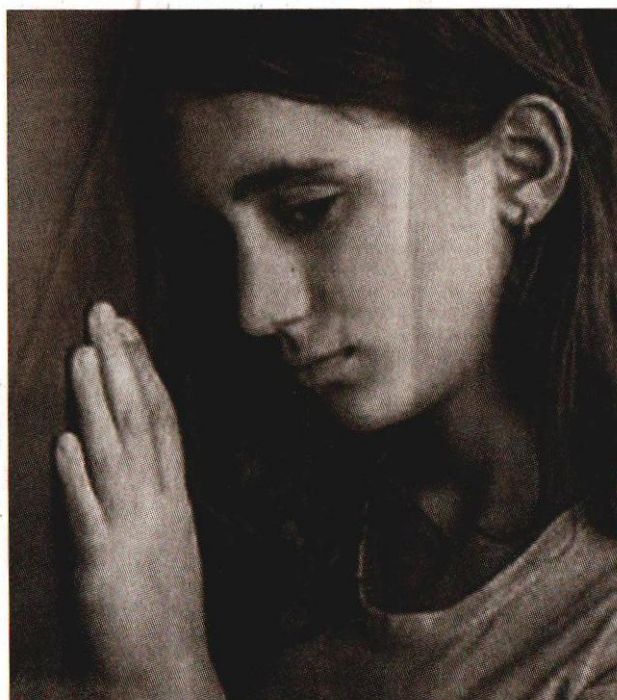
"We have shown for the first time in an established mouse model of anxiety and depression that bacteria play a crucial role in inducing this abnormal behaviour," said Premysl Bercik of McMaster University in Hamilton, Canada, the lead author of the study.

The scientists called for further research to see if the conclusions could be applied to humans, and whether therapies that target intestinal microbes

could benefit patients with psychiatric disorders. Previous research on mice has indicated that gut microbes play an important role in behaviour. For instance, mice with no gut bacteria – called "germ-free" mice – are less likely to show anxiety-like behaviour than normal mice.

The latest study looked at mice that had been exposed to a stressful experience in early life, such as being separated from their mothers. When these mice grow up they display anxiety and depression-like behaviour and have abnormal levels of the stress hormone corticosterone in their blood, as well as suffering from gut dysfunction based on the release of the neurotransmitter acetylcholine.

But when "germ-free" mice with no gut bacteria are exposed to a similar stressful experience as newborns, they do not show any signs of anxiety or depression in later life even though they have similar levels of stress hormones in their blood and markers of dysfunction in their gut.



**ANXIETY** and depression caused by stress linked to gut bacteria living in intestines, scientists find