Psychosocial stress ameliorated by environmental enrichment

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Depressive symptoms caused by stressful psychosocial experiences can be reversed through exposure to a stimulating environment. This finding, published online this week in Molecular Psychiatry, shows promise for behavioral therapies that emphasize neurogenesis to successfully reduce the negative behavioral effects of stress.
Chronic stress inhibits the survival of new neurons, which may hinder the brain’s ability to detect and respond to changes in environment. This inability is thought to trigger symptoms of major depression and post-traumatic stress disorder. Environmental enrichment, however, is known to encourage neurogenesis.

To test the connection between neurogenesis and coping with stress, Michael Lehmann, Robert Schloesser, and colleagues introduced social tension to two sets of mice — one wild-type and the other genetically conditioned to suppress adult neurogenesis. The experimental mice were repeatedly exposed to a group of dominant and aggressive male mice. This induced submissive and depressive symptoms in both groups of mice. Later, the mice were placed in a home environment enriched with ladders, wheels, and tubes that they could interact with. The scientists observed that the wild-type mice lost their depressive behaviors, while the transgenic mice did not recover, suggesting the importance of neurogenesis in effective behavioral therapies.

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