Artificial light at night may contribute to depression

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Artificial light at night (LAN) acts as a circadian disruptor, altering brain gene expression and the complexity of neurons in brain regions related to depression, reports a study published this week in Molecular Psychiatry. The work suggests that nightly exposure to artificial light may be a contributing factor to the rising rate of depression.
The cause of major depressive disorder is poorly understood and although genetic predisposition is known to play a role, the increase in incidence over the past several decades is thought to have occurred too rapidly for genetic shifts to entirely account for the phenomenon. Given that artificial LAN has been linked to several other diseases and is a relatively new presence in the environment, Tracy Bedrosian and colleagues investigated the effects of LAN on specific brain markers and behaviors known to be associated with depression in female hamsters. They find that exposure to chronic dim LAN alters locomotor patterns, increases depression-like behaviors, and reduces both hippocampal spine density and expression of brain-derived neurotrophic factor in the hamsters – consistent with what has been observed in people with depression. Additionally, a gene related to inflammation called tumor necrosis factor was found to be upregulated following exposure to LAN, suggesting that the immune system plays a role in LAN-induced depressive symptoms. Melatonin, which is suppressed by LAN, is also likely to contribute to the neuronal changes observed.

These results suggest that environmental changes such as LAN exposure may warrant more attention as possible contributors to the rising rates of mood disorders.

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