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[Visual brain circuit linked to antidepressants](#)

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The depression-like behavioral state induced by light deprivation can be reversed by activating a region of the brain involved in mood regulation, according to a study in gerbils published online this week in *Neuropsychopharmacology*. The study suggests that the increased activity of retinal ganglion cells innervating a region of the brain called the dorsal raphe nucleus (DRN) works in a manner similar to antidepressant drugs to improve mood in depressed individuals.

Mingliang Pu and colleagues investigated whether mood states in gerbils could be altered by blocking nerve-cell projections from the retina to the DRN, a brain region involved in mood regulation and a major site of action for antidepressant drugs. The most commonly used antidepressant drugs, specific

serotonin reuptake inhibitors (SSRIs), are thought to improve mood by acting in the DRN to increase levels of the brain chemical, serotonin.

Pu's team showed that silencing the retinal cells that project to the DRN temporarily induced depression-like behaviors and decreased levels of serotonin in the DRN. On the other hand, increasing the activity of these cells by altering the input they receive from other retinal neurons reversed depressive-like behavior in the animals, as did treatment with antidepressant drugs.

The research broadens our understanding of affective visual information processing, and suggests that a specific circuit that links the eye to the brain can affect mood through the same mechanism as antidepressant drugs.

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