

# What causes sleepiness when sickness strikes

January 19 2017

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It's well known that humans and other animals are fatigued and sleepy when sick, but it's a microscopic roundworm that's providing an explanation of how that occurs, according to a study from researchers at the Perelman School of Medicine at the University of Pennsylvania. A study published this week in *eLife* reveals the mechanism for this

sleepiness.

Working with a worm's simple nervous system shows how a single nerve cell named ALA coordinates an organism-wide response to sickness. During sickness, cells are under stress, and organisms experience sleepiness to promote sleep and recover from the [cellular stress](#). In the worm, this sleepiness is caused by release from the ALA neuron of FLP-13 and other neuropeptides, a group of chemicals that send signals between [brain neurons](#).

"Sleep is vitally important in helping both people and animals to recover during sickness," said senior author David M. Raizen, MD, PhD, an associate professor of Neurology and a member of the Center for Sleep and Circadian Neurobiology. "Similar signaling may operate in humans and other animals to regulate sleep during sickness. These findings create a launching pad towards future research into the mechanisms for illness-induced sleepiness in humans and other organisms."

These findings reveal that FLP-13 causes sleep by turning down activity in the nervous system cells that help keep an organism awake. Researchers examined [genetic mutations](#) to determine which genes cause the worms to fall asleep when FLP-13 is released. This revealed that worms with mutations that cause them to lack a receptor protein called DMSR-1 on cell surfaces do not become sleepy in response to FLP-13. This indicates that DMSR-1 is essential for FLP-13 to trigger sleep.

Next experiments will target whether illness-induced sleepiness in humans and other mammals is triggered via a similar mechanism. If so, this research may be a critical step towards developing drugs to treat [human](#) fatigue associated with [sickness](#) and other conditions.

**More information:** Michael J Iannacone et al, The RFamide receptor DMSR-1 regulates stress-induced sleep in, *eLife* (2017). [DOI:](#)

[10.7554/eLife.19837](https://doi.org/10.7554/eLife.19837)

Provided by Perelman School of Medicine at the University of Pennsylvania

Citation: What causes sleepiness when sickness strikes (2017, January 19) retrieved 25 December 2022 from <https://medicalxpress.com/news/2017-01-sleepiness-sickness.html>

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