

From the twitching whiskers of babes: Naptime behavior shapes the brain

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The whiskers of newborn rats twitch as they sleep, and that could open the door to new understandings about the intimate connections between brain and body. The discovery reinforces the notion that such involuntary movements are a vital contributor to the development of sensorimotor systems, say researchers who report their findings along with video of those whisker twitches on October 18 in *Current Biology*.

"We found that even whiskers twitch during sleep—and they do so in infant rats long before they move their whiskers in the coordinated fashion known as whisking," said Mark Blumberg of The University of Iowa. "This discovery opens up new avenues for investigating how we develop critical connections between the sensors in our body and the [parts of the brain](#) that interpret and organize sensory information."

In fact, the baby rats' whiskers don't just twitch, they twitch very rapidly and in complex ways. Those twitches during sleep are tied to bursts of activity in the brain, which aren't often observed when rats are awake.

Other parts of the body twitch spontaneously during sleep, too, including the eyes (think "[rapid eye movements](#)") and the limbs. "Spontaneous motor activity can play many different roles in early development and even throughout life," Blumberg explains. "It can be a source of [brain activity](#) in general as well as a source of highly specific, patterned activity that can help shape specific [neural circuits](#)."

But no one had given much thought to this activity in the very special

case of whiskers, which are as important to rats as eyes are to humans. Each individual whisker maps to discrete regions of the brain that process information from that individual whisker alone. The whisker-specific [brain regions](#) form arrangements that map beautifully to the physical arrangements of whiskers on the snout.

That precise organization has made the study of whiskers very popular amongst neuroscientists seeking a basic understanding of the developmental mechanisms linking peripheral sensors and brain, and that's what makes this new discovery all the more intriguing. It might also give us a new appreciation for the important work infants are doing even as they sleep.

"One of the jobs of the infant is to learn how all the parts of the body function even as those parts are growing in size and proportion," Blumberg says. "It is a difficult job."

More information: Tiriack et al.: "Rapid whisker movements in sleeping newborn rats." [DOI:10.1016/j.cub.2012.09.009](https://doi.org/10.1016/j.cub.2012.09.009)

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