

Study: Brain flushes toxic waste during sleep

By Meeri Kim, Washington Post

While we are asleep, our bodies may be resting, but our brains are busy taking out the trash.

A new study has found that the cleanup system in the brain, responsible for flushing out toxic waste products that cells produce with daily use, goes into overdrive in mice that are asleep. The cells even shrink in size to make for easier cleaning of the spaces around them.

Scientists say this nightly self-clean by the brain provides a compelling biological reason for the restorative power of sleep.

“Sleep puts the brain in another state where we clean out all the byproducts of activity during the daytime,” said study author and University of Rochester neurosurgeon Maiken Nedergaard. Those byproducts include beta-amyloid protein, clumps of which form plaques found in the brains of Alzheimer’s patients.

Staying up all night could prevent the brain from getting rid of these toxins as efficiently, and explain why sleep deprivation has such strong and immediate consequences. Too little sleep causes mental fog, crankiness, and increased risks of migraine and seizure. Rats deprived of all sleep die within weeks.

Although as essential and universal to the animal kingdom as air and water, sleep is a riddle that has baffled scientists and philosophers for centuries. Drifting off into a reduced consciousness seems evolutionarily foolish, particularly for those creatures in danger of getting eaten or attacked.

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