Studying sleep's profound and extensive effects on brain function

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Although the general benefits of a good night's sleep are well established, one-third of American adults do not get a sufficient amount of sleep. Recent research sheds new light on the extensive effects of

sleep on the brain, as well as the harms caused by sleep loss. The studies were presented at Neuroscience 2017, the annual meeting of the Society for Neuroscience and the world's largest source of emerging news about brain science and health.

Adequate restful sleep leads to improved cognitive function and enhanced memory formation, while insufficient, restless sleep has harmful effects such as impaired memory and judgement, and can lead to increased risk for medical conditions such as stroke, obesity, and cardiovascular disease. The connection between sleep and brain function has long been an area of exploration for neuroscientists.

Today's new findings show that:

- MicroRNA expression may serve as an indicator of sleep loss in rats and humans, suggesting a possible method for predicting those at risk for diseases and cognitive deficits typically associated with sleep debt (Seema Bhatnaghar, abstract 239.25, see attached summary).
- Three species of spiders have amazingly fast circadian clocks, raising questions about how they avoid the negative effects typically associated with deviating from the normal biological timeframe (Darrell Moore, abstract 237.01, see attached summary).
- The brain preferentially reactivates negative memories during sleep, prioritizing the retention of these emotional memories (Roy Cox, abstract 431.28, see attached summary).

Other recent findings discussed show that:

- A computerized algorithm can determine whether people viewed images of faces or houses by comparing patterns of electrical activity in the brain during sleep (Monika Schönauer, abstract

193.09, see attached summary).

"Sleep is even more multifaceted and fascinating than we realize," said press conference moderator Sigrid Veasey, a professor at the Center for Sleep and Circadian Neurobiology at the University of Pennsylvania's Perelman School of Medicine. "Today's findings reveal interesting new aspects of the complex relationship between sleep and the brain, and the vital role that sleep plays in everyday human functioning."

Provided by Society for Neuroscience

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