

## Press Release

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# Direct link between REM sleep loss and the desire for sugary and fatty foods discovered

Tsukuba, Japan – It is not well understood what role sleep loss plays in affecting areas of the brain that control the desire to consume unhealthy foods. A new paper published in the journal *“eLife”* finds that rapid eye movement (REM) sleep loss leads to increased consumption of unhealthy foods, specifically sucrose and fat. The researchers at the University of Tsukuba’s International Institute for Integrative Sleep Medicine (WPI-IIIS) used a new method to produce REM sleep loss in mice along with a chemical-genetic technique to block prefrontal cortex neurons and the behaviors they mediate. As a result, the IIIS researchers discovered that inhibiting these neurons reversed the effect of REM sleep loss on sucrose consumption while having no effect on fat consumption.

REM sleep is a unique phase of sleep in mammals that is closely associated with dreaming and characterized by random eye movement and almost complete paralysis of the body. The prefrontal cortex plays a role in judging the palatability of foods through taste, smell and texture. Moreover, persons who are obese tend to have increased activity in the prefrontal cortex when exposed to high calorie foods. “Our results suggest that the medial prefrontal cortex may play a direct role in controlling our desire to consume weight promoting foods, high in sucrose content, when we are lacking sleep,” says Kristopher McEown, the lead author on this project.

### About IIIS

IIIS was launched by the Ministry of Education, Culture, Sports, Science and Technology of Japan with the aim of building globally visible research centers. At IIIS gather globally prominent scientists from multiple research fields contributing to elucidate the fundamental principles of sleep/wake regulation, and develop new strategies to assess and treat sleep diseases as well as the closely associated metabolic and mental disorders. The research was funded by the Japan Society for the Promotion of Science. ■

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### Bibliographic information

McEown K *et al.* (2016) Chemogenetic inhibition of the medial prefrontal cortex reverses the effects of REM sleep loss on sucrose consumption *eLife*, <http://dx.doi.org/10.7554/eLife.20269>

### Media Contact

Public Relations Unit, International Institute for Integrative Sleep Medicine (WPI-IIIS), University of Tsukuba  
[wpi-iiis-alliance@ml.cc.tsukuba.ac.jp](mailto:wpi-iiis-alliance@ml.cc.tsukuba.ac.jp)