Our internal clocks can become ticking time bombs for diabetes and obesity

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If you're pulling and all-nighter to finish a term paper, a new parent up all night with a fussy baby, or simply can't sleep like you once could, then you may be snoozing on good health. That's because new research published in *The FASEB Journal* used mice to show that proper sleep patterns are critical for healthy metabolic function, and even mild impairment in our circadian rhythms can lead to serious health consequences, including diabetes and obesity.

"We should acknowledge the unforeseen importance of our 24-hour rhythms for health," said Claudia Coomans, Ph.D., a researcher involved in the work from the Department of Molecular Cell Biology in the Laboratory of Neurophysiology at Leiden University Medical Center in Leiden, Netherlands. "To quote Seneca 'We should live according to nature (secundum naturam vivere).'"

To make this discovery, Coomans and colleagues exposed mice to constant light, which disturbed their normal internal clock function, and observed a gradual degradation of their bodies' internal clocks until it reached a level that normally occurs when aging. Eventually the mice lost their 24-hour rhythm in energy metabolism and insulin sensitivity, indicating that relatively mild impairment of clock function had severe metabolic consequences.

"The good news is that some of us can 'sleep it off' to avoid obesity and diabetes," said Gerald Weissmann, M.D., Editor-in-Chief of *The FASEB Journal*. "The bad news is that we can all get the metabolic doldrums

when our normal day/night cycle is disrupted."

More information: Claudia P. Coomans, Sjoerd A. A. van den Berg, Thijs Houben, Jan-Bert van Klinken, Rosa van den Berg, Amanda C. M. Pronk, Louis M. Havekes, Johannes A. Romijn, Ko Willems van Dijk, Nienke R. Biermasz, and Johanna H. Meijer. Detrimental effects of constant light exposure and high-fat diet on circadian energy metabolism and insulin sensitivity. *FASEB J.* April 2013 27:1721-1732; doi:10.1096/fj.12-210898

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