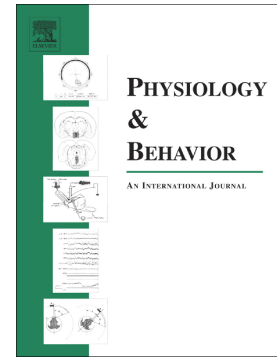


## Accepted Manuscript

The endogenous circadian clock programs animals to eat at certain times of the 24-hour day: What if we ignore the clock?

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PII: S0031-9384(18)30193-8  
DOI: doi:[10.1016/j.physbeh.2018.04.017](https://doi.org/10.1016/j.physbeh.2018.04.017)  
Reference: PHB 12168  
To appear in: *Physiology & Behavior*  
Received date: 14 February 2018  
Revised date: 12 April 2018  
Accepted date: 13 April 2018

Please cite this article as: Peng Jiang, Fred W. Turek , The endogenous circadian clock programs animals to eat at certain times of the 24-hour day: What if we ignore the clock?. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Phb(2017), doi:[10.1016/j.physbeh.2018.04.017](https://doi.org/10.1016/j.physbeh.2018.04.017)

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The endogenous circadian clock programs animals to eat at certain times of the 24-hour day: what if we ignore the clock?

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## **Abstract**

The discovery of the molecular mechanisms underlying the circadian clock, which functions in virtually every cell throughout the body to coordinate biological processes to anticipate and better adapt to daily rhythmic changes in the environment, is one of the major biomedical breakthroughs in the 20<sup>th</sup> century. Twenty years after this breakthrough, the biomedical community is now at a new frontier to incorporate the circadian clock mechanisms into many areas of biomedical research, as studies continue to reveal an important role of the circadian clock in a wide range of biological functions and diseases. A forefront of this exciting area is the research of interactions between the clock and energy metabolism. In this review, we summarize animal and human studies linking disruptions of the circadian clock, either environmental or genetic, to metabolic dysfunctions associated with obesity, diabetes, and other metabolic disorders. We also discuss how these advances in circadian biology may pave the way to revolutionize clinical practice in the era of precision medicine.

Keywords: circadian clock; energy metabolism; obesity; diabetes

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## **Highlights**

- A disrupted the circadian clock is linked to adverse outcomes in energy metabolism.

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