This month:


May 2007

Table of Contents

Editorial

Columns

Features

Editorial Advisory Board

Volume 21 | Issue 4 | Page 74

| Reprints | Issue Contents

Comment on this article

By Manasee Wagh

HOT PAPERS IN CIRCADIAN RHYTHMS

Metabolism gets clocked

The paper:

F.W. Turek et al., "Obesity and metabolic syndrome in circadian *Clock* mutant mice." *Science*, 308:1043, 2005. (Cited in 90 papers) | [PubMed]

The finding:

Joe Bass and others at Northwestern University found that mice with a mutated *Clock* gene showed both abnormal circadian rhythms and feeding behavior. Metabolic problems included obesity and abnormally high levels of blood cholesterol.

The surprise:

Circadian variation in insulin secretion and action has long been recognized, says Bass, professor at Evanston Northwestern Healthcare. "What's changed is we now have a new molecular window on pathways that give rise to the observed circadian characteristics in the regulation of glucose homeostasis."

The verdict:

Colleen McClung, a circadian researcher at the University of Texas Southwestern Medical Center, Dallas, writes via E-mail that she was struck by "the broad range of metabolic phenotypes that are present in the Clock mutants ... It will be interesting to determine how many of these effects are due to the loss of Clock function," she adds.

The next step:

Bass says he's looking into ex vivo analysis, which "enables us to understand cell autonomous function of Clock within individual metabolic tissues like liver, fat, muscle, and pancreas." His group is also looking to localize the areas within the brain that integrate circadian and metabolic systems.

The numbers:

	Energy Intake (kcal/wk)	Body weight (g)
Wild-type mice (regular diet)	84.1	29.5
Clock mice (regular diet)	91.8	33.8
Wild-type mice (high-fat diet)	92.4	32.1
Clock mice (high-fat diet)	105.4	40.3

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