

Stomach 'clock' tells us how much to eat

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(Medical Xpress)—University of Adelaide researchers have discovered the first evidence that the nerves in the stomach act as a circadian clock, limiting food intake to specific times of the day.

The discovery, published today in *The Journal of Neuroscience*, could lead to new information about how the gut signals to our brains about when we're full, and when to keep eating.

In the University's Nerve-Gut Research Laboratory, Dr Stephen Kentish investigated how the nerves in the stomach respond to stretch, which occurs as a consequence of [food intake](#), at three-hourly intervals across one day.

"These nerves are responsible for letting the brain know how much food

we have eaten and when to stop eating," says Dr Kentish, who is the lead author of the paper.

"What we've found is that the nerves in the gut are at their least sensitive at time periods associated with being awake. This means more food can be consumed before we feel full at times of high activity, when more energy is required.

"However, with a change in the day-night cycle to a period associated with sleeping, the nerves in the stomach become more sensitive to stretch, signalling fullness to the brain quicker and thus limiting food intake. This variation repeats every 24 hours in a circadian manner, with the nerves acting as a clock to coordinate food intake with energy requirements," he says.

So far this discovery has been made in laboratory studies, not in humans.

"Our theory is that the same variations in [nerve](#) responses exist in human stomachs, with the gut nerves being less sensitive to fullness during the day and more sensitive at night," Dr Kentish says.

Study leader Associate Professor Amanda Page says this research could lead to further discoveries about how changes in people's circadian clocks affect their eating habits.

"We know that shift workers, for example, are more prone to disruptions in sleep and eating behaviour, leading to obesity and other health problems. We are now conducting further research to see what kind of impact such changes to the circadian rhythm will have on eating behaviour, and how the nerves in the stomach react to those changes," Associate Professor Page says.

More information: [dx.doi.org/10.1523/JNEUROSCI.3846-13.2013](https://doi.org/10.1523/JNEUROSCI.3846-13.2013)

Provided by University of Adelaide

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