New brain discovery could help in the fight against obesity

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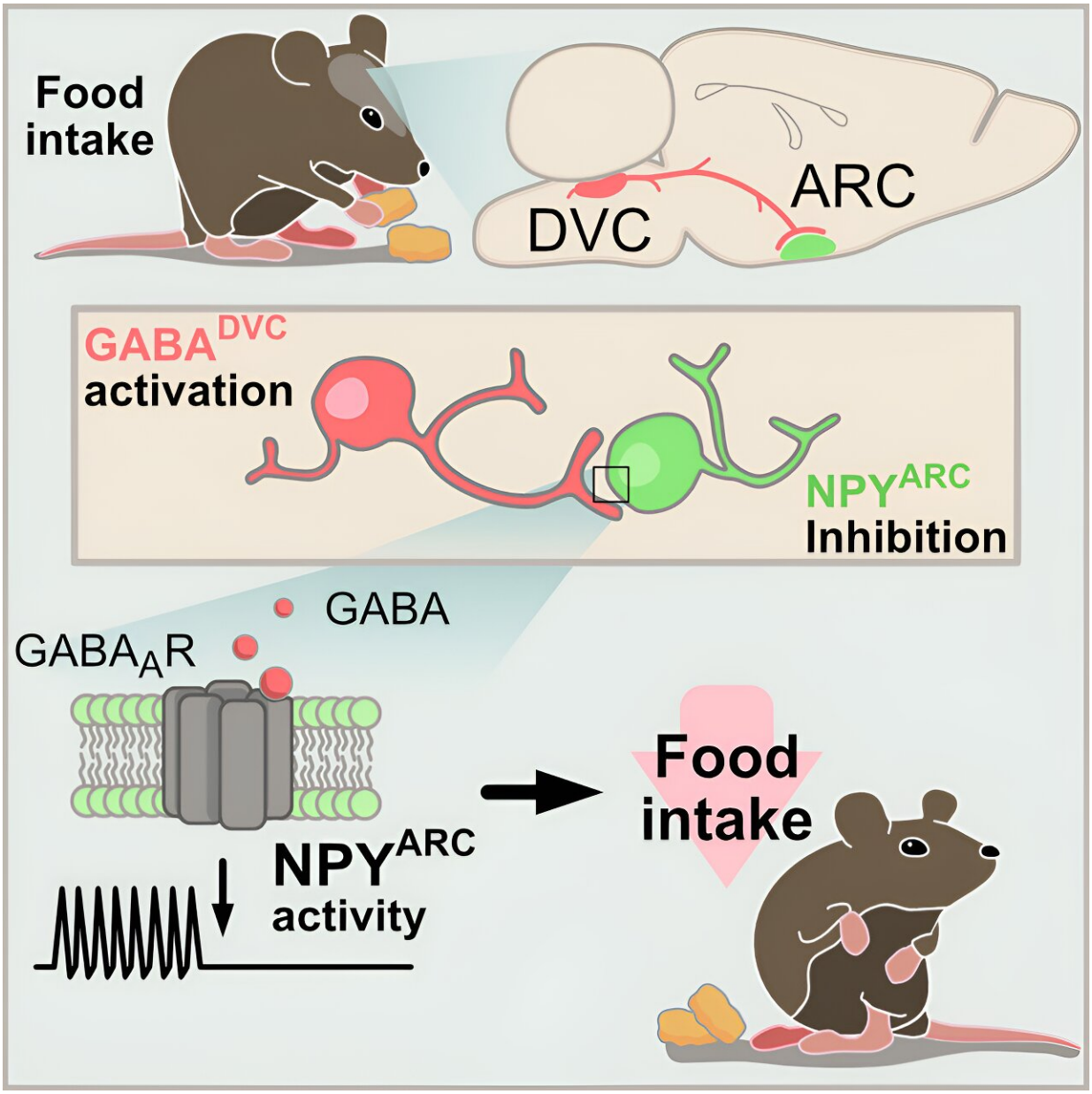

Credit: *Current Biology* (2024). DOI: 10.1016/j.cub.2024.02.074

One of the largest threats to human health is obesity, but now researchers from the University of Aberdeen Rowett Institute have made an important discovery in how the brain controls food intake.

Obesity and being overweight have become the "new normal" in modern times and can lead to a multitude of health problems. We know that excess weight is primarily caused by eating more calories than the body needs; however, new research published in *Current Biology* has found a specific cluster of cells in the brain that control body weight.

How the brain controls hunger has not been fully defined. The researchers discovered a cluster of brain cells that can be harnessed to reduce food intake and body weight. One way they do this is by turning down cells that stimulate hunger.

The cluster of cells that the team discovered make a chemical called GABA, whose primary job is to block signals in the brain.

Dr. Pablo Blanco Martínez de Morentin who led the study while at the Rowett Institute (and is now a group leader at the University of Leeds) said, "We have found a new connection between an under-studied subset of neurons in the brainstem sensing food consumption that turn off primary hunger neurons in another part of the brain. This connection uses the chemical GABA. This is exciting news as it opens up the potential for new strategies for weight regulation."

The team, including scientists from the University of Cambridge, used a combination of cutting-edge techniques ranging from recording the activity of single cells to measuring changes in daily food intake and

body weight in mice to make this discovery.

Senior author, Professor Lora Heisler from the University of Aberdeen Rowett Institute said, "We know that the brain controls food intake, but how it does this has not been fully established. We've identified a cluster of cells within the brain that can be harnessed to reduce food intake and body weight.

"One way that they do this is through dampening the activity of cells that govern hunger. This is particularly important because one of the primary challenges to sticking with a diet and losing weight is hunger.

"An interesting feature of these brainstem GABA cells is that the widely prescribed obesity medication liraglutide uses them to reduce food intake. We discovered that turning on these GABA cells reduces food intake without causing nausea, which is a common undesired side effect of liraglutide."

Going forward, the scientists say this research could pave the way to develop more targeted medications reducing food intake and body weight by tackling hunger, without causing nausea.

More information: Pablo B. Martinez de Morentin et al, A brainstem to hypothalamic arcuate nucleus GABAergic circuit drives feeding, *Current Biology* (2024). DOI: 10.1016/j.cub.2024.02.074

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