

# Brain Cells May Aid in Waist Management

**Could your brain cells be the next weapon to fight the obesity epidemic? Scientists from the UK believe this could be the case. With over 30% of the population now meeting the definition of obese (and between 15-20% of children and teens as well) the discovery is welcome news.**

Nicholas Dale, a neuroscience professor in Warwick, led a team that discovered a group of cells called tanycytes that talk to the brain directly and tell it to stop feeling hunger. Tanycytes are glial, non-neuronal cells found in the hypothalamus that may control body weight and energy levels. The cells also appear to control satiety, the feeling of fullness, based on certain nutrients in our food.

Scientists already knew that tanycytes could find glucose in cerebrospinal fluid, but new studies find that essential amino acids can trigger these cells to make us feel less hungry.

How? Well, calcium imaging was used to make cells fluorescent and easier to track in vivo. Several essential and non-essential amino acids were then added to the brain cells. Tanycytes reacted to lysine and arginine, two essential amino acids, by sending signals to the hypothalamus, which controls appetite. After deleting genes which detect umami (savory) taste in mice, scientists discovered that tanycytes did not respond to the amino acids. The scientists concluded that amino acids are identified by umami taste receptors, and coordinate the relationship between amino acids and the brain. Umami is responsible for savory taste in humans and most non-aromatic amino acids in rodents.

According to professor Dale, "Amino acid levels in blood and brain following a meal are a very

important signal that imparts the sensation of feeling full."

Sources of lysine and arginine include meat, poultry, avocados, apricots, almonds, lentils, mackerel, and plums. These foods could possibly make us feel fuller sooner. The scientists suggest that dietary interventions could alter hypothalamic brain circuits responsible for appetite. Research shows that tanycytes can make new neurons and can be remodeled by dietary interventions.

While more research is needed, it certainly can't hurt to add lentils to your diet a few times per week, have almonds, plums, or apricots as snacks and sneak some fatty fish like mackerel into your meal plan. Add avocado to salads or sandwiches as well.

## References:

1. Greta Lazutkaite, Alice Soldà, Kristina Lossow, Wolfgang Meyerhof, Nicholas Dale. Amino acid sensing in hypothalamic tanycytes via umami taste receptors. *Molecular Metabolism*. DOI: <http://dx.doi.org/10.1016/j.molmet.2017.08.015>.
2. Timothy Goodman and Mohammad K. Hajihosseini. Hypothalamic tanycytes—masters and servants of metabolic, neuroendocrine, and neurogenic functions. *Front Neurosci*. 2015; 9: 387.