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Scientists connect tuberal nucleus with appetite and body weight

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SBIC's research findings were published in the peer-reviewed journal Science on 6 July 2018.

Singapore – Researchers at A*STAR's Singapore Bioimaging Consortium (SBIC) have identified a new region of the mouse brain called the Tuberal Nucleus (TN), which affects appetite and body weight. It is notable that the TN is of a similar structure to the Nucleus Tuberalis Lateralis (NTL) in the human brain, of which the function is unknown. A*STAR researchers' discovery of the role of TN in affecting appetite and body weight is a major finding for the understanding of appetite changes in humans, and potential treatment and prevention of eating disorders such as obesity. SBIC's research findings were published in the peer-reviewed journal Science on 6 July 2018.

Past research has shown a strong correlation between neurodegenerative diseases and eating disorders. While neurodegenerative disease patients often show changes in appetite and metabolism, the neural mechanisms involved are not known. Specific pathological changes in NTL have been found in patients suffering from neurodegenerative diseases, but the functional consequence is unknown. The notion of NTL's role in regulating food intake has never been tested either. Until SBIC's in-depth study and subsequent discovery, the roles of the mouse TN or human NTL, located in the hypothalamus of the brain, remained a mystery.

Dr Fu Yu and his research team from SBIC found that somatostatin (SST) neurons in the tuberal nucleus (TN) played a crucial role in regulating feeding in mice. In the team's experiments, mice either fasted overnight, or were injected with ghrelin - a gut hormone which triggers hunger sensations. Results showed that these procedures led to a spike in SST neuron activity, indicating that these neurons were activated by hunger and likely involved in feeding regulation.