New insight into Alzheimer's disease

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Structure of the NCS-1 protein.

(PhysOrg.com) -- A new molecule important in a part of the memory that allows recognition of people has been identified by researchers at the University of Bristol. This type of memory is impaired at an early stage during Alzheimer's disease and so it is hoped that understanding the function of this molecule may lead to better cures and treatments for this devastating disease.

To understand human cognition is one of the great scientific challenges of the twenty-first century. At the heart of the question is how information is stored in the brain of humans and other mammals. It is now widely accepted that the major mechanisms by which the brain stores information is the ability of the connection (synapse) between two neurons to change in strength. This process is known as 'synaptic plasticity'.

The research, led by Professor Kei Cho from the Department of

Medicine, has identified a new molecule that is important for one of the major forms of synaptic plasticity known as long-term depression (LTD).

It was found that the molecule known as 'neuronal calcium sensor-1' (NCS-1), which had previously been identified as a molecule designed to detect minute amounts of calcium, is required for LTD. This form of synaptic plasticity probably underlies some forms of learning and memory in the brain, thus NCS-1 is likely to be a molecule that is important for memory. The research is published today (24 December) in the journal Neuron.

Professor Cho said: “This work is particularly pertinent since it was conducted in a brain region, the perirhinal cortex, which is important for recognition memory - the memory that you have seen a person before, for example. This type of memory is impaired at an early stage during Alzheimer’s disease and so understanding the molecular basis of synaptic plasticity in this region of the brain may, one day, lead to better cures and treatments for this devastating disease.”

Neuron: www.cell.com/neuron/home

Provided by University of Bristol