

New clue on the origin of Huntington's disease

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The synapses in the brain act as key communication points between approximately one hundred billion neurons. They form a complex network connecting various centres in the brain through electrical impulses. New research from Lund University suggests that it is precisely here, in the synapses, that Huntington's disease might begin.

The researchers at Lund University looked into the brains of mice with real-time imaging methods, following some of the very first stages of the disease through advanced microscopes. What they discovered was an unprecedented degradation of synaptic activity. Long before the well documented nerve cell death, [synapses](#) that are important for communication between brain centres that control memory and learning begin to wither. This process has never been mapped before and could be an important step towards understanding the serious non-motor symptoms that affect Huntington patients long before the movement disorders start to show.

"With the naked eye, we have now been able to follow the step by step events when these synapses start to break down. If we are to halt or reverse this process in the future, it is necessary to understand exactly what happens in the initial phase of the disease. Now we know more", says Professor Jia-Yi Li, the research group leader.

Huntington's disease has long been characterized by the involuntary writhing movements faced by patients. But in fact, Huntington's has a very broad and highly individual symptomatology. Depression, [memory](#)

[loss](#) and [sleep disorders](#) are all common early on in the disease.

"Many patients testify that these symptoms affect quality of life significantly more than the involuntary jerky movements. Therefore, it is extremely important that we achieve progress in this field of research. Our goal now is to find new therapies that can increase the lifespan of these synapses and maintain their vital function", explains postdoc Reena, who lead the imaging experiments.

More information: Murmu, R. et al. Dendritic Spine Instability Leads to Progressive Neocortical Spine Loss in a Mouse Model of Huntington's Disease, *Neurobiology of Disease*. [www.jneurosci.org/content/33/3 ... d=jneuro;33/32/12997](http://www.jneurosci.org/content/33/3...d=jneuro;33/32/12997)

Provided by Lund University

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