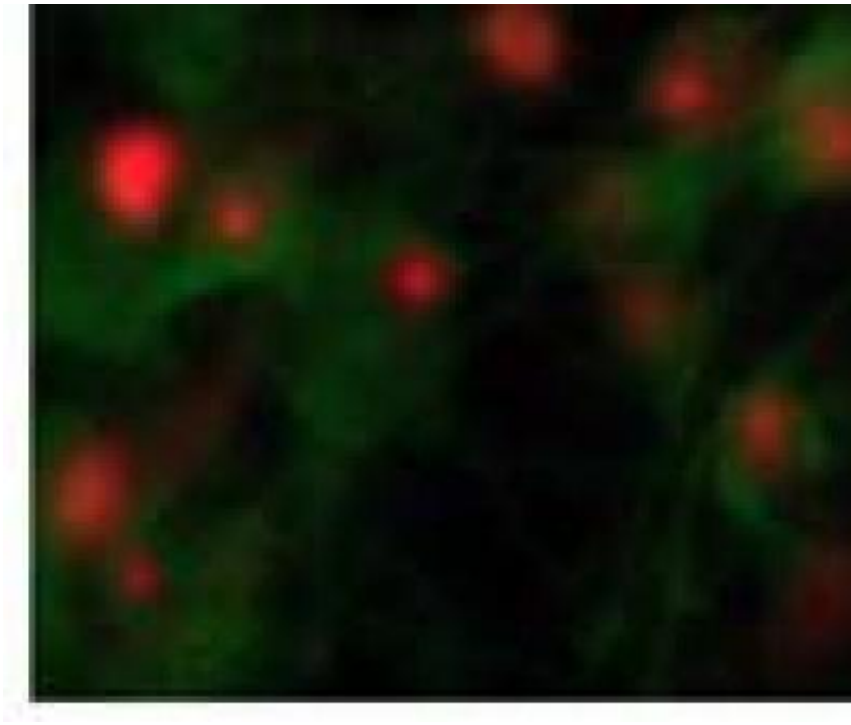


Rat hippocampal neurons: An executor of neuroinflammation

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This image shows localization of Toll-like receptor 4 (TLR4) in primary cultured hippocampal neurons by fluorescence microscopy. Cultured cells were stained with neuron-specific nuclear protein (neuronal nuclei; NeuN) to label neurons (red) or TLR4 (green). Almost all the cultured cells are NeuN/ TLR4-double positive. TLR4 was mostly expressed on the cell surface with limited staining in the cytoplasm. Credit: *Neural Regeneration Research*

Recent findings suggest that Toll-like receptor 4 expressed in the central nervous system, especially in glial cells, plays a vital role in

neuroinflammation and neurodegenerative conditions. Traditional theory suggests that neurons are injured by inflammatory factors released from glial cells, and that neurons are the victims of neuroinflammation. However, it has recently been suggested that Toll-like receptor 4 is expressed by cerebral cortical neurons.

Yae Hu and team from Medical School of Nantong University found that lipopolysaccharide participates in neuroinflammation by stimulating Toll-like receptor 4/nuclear factor- κ B pathway in hippocampal neurons. Researchers believe that neurons may be both "passive victims" and "activators" of neuroinflammation.

These findings were published in the *Neural Regeneration Research* (Vol. 8, No. 16, 2013).

More information: Hu YE, Mao JH, Zhang Y, Zhou AL. Role of Toll-like receptor 4 in inflammatory reactions of hippocampal neurons. *Neural Regen Res.* 2013;8(16):1465-1472.

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Provided by Neural Regeneration Research

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