

Orexin wakes up your brain by self-excitation mechanism

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For advanced activities of our daily life (such as driving a car, or seeing a movie), to be awake is important. It has been known so far that neuropeptide in the brain called "Orexin" controls sleep and awakening besides appetite. Here, the research group led by Dr. Akihiro Yamanaka, National Institute for Physiological Sciences (NIPS), found that orexin-releasing neurons have the self-excitation mechanism that activate each other among them, and maintain awaking. From this result, the application to doze prevention or insomnia treatment can be expected. It is reported in the *Journal of Neuroscience* of the issue on September 22, 2010.

The research group focused on the orexin-releasing neurons in cerebral [hypothalamus](#). They found that the orexin-releasing neurons not only release orexins, but also receive the stimulation of them via the orexin receptor (mainly orexin receptor type 2) and activate each other among them. This mechanism enables the orexin-releasing neurons to keep high level activity, and to maintain awaking. There was the established theory that "the orexin does not act on to the orexin neuron" from the original research result of its discovery, but this discovery overturns it.

By this study, Dr. Yamanaka clarified the nerve mechanism which maintains awakening or raises awakening level. It can be considered that maintaining the orexin [neuron activity](#) highly by this mechanism is one of the insomnia mechanisms. He believes that this study results can be applied to the doze prevention and the treatment of the insomnia in the future.

Provided by National Institute for Physiological Sciences

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