

# Cerebellum functions

The [cerebellum](#) (Latin for “little brain”) is a region that plays an important role in motor control.

It may also be involved in some [cognitive](#) functions such as [attention](#) and [language](#), and in regulating fear and pleasure responses, but its [movement](#)-related functions are the most solidly established. The cerebellum does not initiate movement, but it contributes to [coordination](#), [precision](#), and accurate timing. It receives input from [sensory systems](#) of the [spinal cord](#) and from other parts of the brain, and integrates these inputs to fine tune motor activity.

Cerebellar damage does not cause paralysis, but instead produces disorders in fine movement, equilibrium, posture, and motor learning.

---

Cerebellar nuclei (CN) axons connect to various parts of the thalamo-cortical network, but detailed information on the characteristics of cerebello-thalamic connections is lacking.

Gornati et al., assessed the cerebellar input to the ventrolateral (VL), ventromedial (VM), and centrolateral (CL) thalamus. Confocal and electron microscopy showed an increased density and size of CN axon terminals in VL compared to VM or CL. Electrophysiological recordings in vitro revealed that optogenetic CN stimulation resulted in enhanced charge transfer and action potential firing in VL neurons compared to VM or CL neurons, despite that the paired-pulse ratio was not significantly different. Together, these findings indicate that the impact of CN input onto neurons of different thalamic nuclei varies substantially, which highlights the possibility that cerebellar output differentially controls various parts of the thalamo-cortical network <sup>1)</sup>.

<sup>1)</sup>

Gornati SV, Schäfer CB, Eelkman Rooda OHJ, Nigg AL, De Zeeuw CI, Hoebeek FE. Differentiating Cerebellar Impact on Thalamic Nuclei. Cell Rep. 2018 May 29;23(9):2690-2704. doi: 10.1016/j.celrep.2018.04.098. PubMed PMID: 29847799.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

[https://neurosurgerywiki.com/wiki/doku.php?id=cerebellum\\_functions](https://neurosurgerywiki.com/wiki/doku.php?id=cerebellum_functions)

Last update: **2024/06/07 02:53**

