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© SPMM Course 4. Cell types in the nervous system A. Cortical layers The human brain contains approximately 10^{11} neurons (nerve cells) and approximately 10^{12} glial cells. According to the distribution of the various types of neurons (i.e. the cytoarchitecture), Brodmann divided the cortex into 47 'specialised' areas. The neocortex (most of the cerebrum) is made up of six layers, with pial surface above layer 1 to the white matter below layer 6. Layers 2 and 4 are mainly afferent (receiving inputs) while 5 and 6 are mainly efferent (sending outputs). The pyramidal neurons with their triangular-shaped cell bodies make up nearly 75% of the cortical neurons. Stellate cells (25%) are present in all the layers except layer 1.

Layer Name	Predominant cells
Molecular/agranular	Glial cells, dendrites from neurons of deeper layers and the horizontal cells of Cajal.
External Granular layer	Granule cells and small pyramidal cells (these get larger as you move down)
External Pyramidal layer	Small and medium sized pyramidal cells.
Internal Granular layer	

Some pyramidal cells, mostly granule cells. Receives thalamocortical inputs.	Internal Pyramidal layer
Largest pyramidal cells (esp. in motor cortex: Betz cells)	Multiform layer

A mixture of all cells, spindle cells, Martinotti cells. The major source of corticothalamic fibres. Gives rise to association/commissural and projection fibres.

The cerebellar cortex is three layered. The molecular layer consisting of basket cells and stellate cells, Purkinje layer consisting of Purkinje cells and a Granular layer consisting of granule and Golgi cells. B. Special neuronal cell types Purkinje cells are a class of GABAergic neurons located in the cerebellar cortex only. Purkinje cells form the sole output of all motor coordination in the cerebellum they connect to the deep cerebellar nuclei via inhibitory projections. Granule cells are found within the granular layer of the cerebellum, layer 4 of the cerebral cortex, the dentate gyrus of the hippocampus, and in the olfactory bulb. Large pyramidal cells called Betz cells are seen in the primary motor cortex. Betz cells are pyramidal cell neurons located within the fifth layer of the grey matter in the primary motor cortex. These neurons are

Revision #1

Created 2026-01-04 20:02:40 UTC by Omar Ayman

Updated 2026-01-04 20:02:40 UTC by Omar Ayman