Primary Cortex

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Synonyms

[Agranular \(motor cortex\); Granular or koniocortex \(sensory cortex\); Idiopathic cortex](#)

Definition

Those areas of neocortex that either receive direct projections from the specific sensory relay nuclei of the thalamus (*primary sensory cortex*) or represent the final common pathway for motor fibers (*primary motor cortex*) prior to their entering the corticobulbar and corticospinal tracts of the internal capsule. The primary sensory cortices include Brodmann's areas 3, 1 and 2 (somatosensory) in the postcentral gyrus of the parietal lobe, area 41 (auditory) dorsal portion of the superior temporal gyrus within the temporal operculum, and

area 17 (visual) on the upper and lower banks of the calcarine fissure on the medial aspect of the occipital lobe. The primary motor cortex (Brodmann's area 4) is located in the precentral gyrus of the frontal lobe. Although all are considered "primary" cortices, only unilateral lesions of the primary visual cortex will result in a complete loss of function (homonymous hemianopia). Unilateral lesions to the primary somatosensory area will result in reduced tactile discrimination, but not total anesthesia. Due to the extensive crossing of the auditory system, unilateral lesions to the primary auditory cortex generally have very limited effects on hearing (in either ear). Finally, lesions that are strictly limited to the precentral gyrus will typically result in significant weakness and loss of skilled movement for the affected body part, but not total paralysis.

References and Readings

- Mesulam, M.-M. (2000). Chapter 1: Behavioral neuroanatomy: Large-scale networks, association cortex, frontal syndromes, the limbic system, and hemispheric specialization. In M. Mesulam (Ed.), *Principles of behavioral and cognitive neurology* (pp. 1–120). New York: Oxford University Press.