

Middle frontal gyrus



- Neural and computational mechanisms of loss aversion in smartphone addiction
- Decoding words during sentence production with ECoG reveals syntactic role encoding and structure-dependent temporal dynamics
- Tumor resection in paramedian structures of the frontal lobe poses a risk for corpus callosum infarction
- Weight restoration in patients with anorexia nervosa after stereotactic surgery and brain morphometric insights
- Visualization of functional and effective connectivity underlying auditory descriptive naming
- A left-lateralized dorsolateral prefrontal network for naming
- MR-guided focused ultrasound thalamotomy modulates cerebello-thalamo-cortical tremor network in essential tremor patients
- Network centrality alterations in patients with moyamoya disease after combined revascularization surgery: a resting-state fMRI study

The middle frontal gyrus (MFG) is usually more sinuous than the inferior frontal gyrus or superior frontal gyrus and it often connects to the precentral gyrus via a thin isthmus¹⁾

The middle frontal gyrus makes up about one-third of the frontal lobe of the human brain.

The middle frontal gyrus, like the inferior frontal gyrus and the superior frontal gyrus, is more of a region than a true gyrus.

The borders of the middle frontal gyrus are the inferior frontal sulcus below; the superior frontal sulcus above, and the precentral sulcus behind.

The middle frontal gyrus is frequently divided longitudinally by the intermediate sulcus. The surgeon should not confuse the intermediate sulcus with the superior frontal sulcus or inferior frontal sulcus. The inferior frontal sulcus is often interrupted, so the surgeon performing a subpial tumor dissection in the middle frontal gyrus may inadvertently wander into the inferior frontal gyrus. A break in the inferior frontal sulcus over the pars triangularis allows the surgeon to remove a middle frontal lesion to wander into Broca's area.

The middle frontal gyrus is comparable with the Broca area in its ability to determine hemispheric dominance for language using resting-state functional magnetic resonance imaging. Results suggest

the addition of resting-state fMRI of the middle frontal gyrus to the list of noninvasive modalities that could be used in patients with [gliomas](#) to evaluate hemispheric dominance of language before tumor resection. In patients who cannot participate in traditional task-based [fMRI](#), resting-state fMRI offers a task-free alternate to pre surgically map the [eloquent](#) cortex ²⁾.

Right Middle Frontal Gyrus

see [Right Middle Frontal Gyrus](#).

Left middle frontal gyrus

see [Left middle frontal gyrus](#).

Approaches

see [Middle frontal gyrus approach](#).

References

1)

Naidich TP. MR [Imaging](#) of [Brain Surface Anatomy](#). [Neuroradiology](#). 1991; 33:S95-S99

2)

Gohel S, Laino ME, Rajeev-Kumar G, Jenabi M, Peck K, Hatzoglou V, Tabar V, Holodny AI, Vachha B. Resting-State Functional Connectivity of the Middle Frontal Gyrus Can Predict Language Lateralization in Patients with Brain Tumors. *AJNR Am J Neuroradiol*. 2019 Feb;40(2):319-325. doi: 10.3174/ajnr.A5932. Epub 2019 Jan 10. PubMed PMID: 30630835; PubMed Central PMCID: PMC6375738.

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