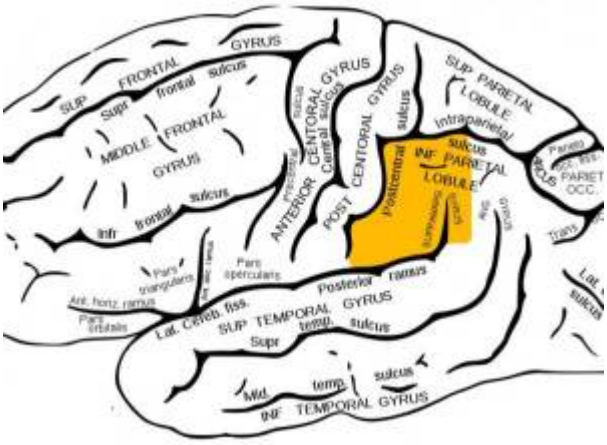
Supramarginal gyrus



- Cross-frequency coupling between low frequency and gamma oscillations altered in cognitive biotype of depression
- Intracranial High-Frequency Oscillations and Epileptogenic Zone: Incorporating Neuroanatomic Variation
- Facial emotion recognition in focal epilepsy: localization is not the main factor
- Transient Inhibition of the Posterior Parietal Cortex Affects Action-related But Not Action-unrelated Visual Processing during Path Integration
- Pain integration of multimodal noxious stimulation based on the perceptual instruction
- From Correlation to Causation: Understanding Episodic Memory Networks
- Alterations in the functional connectivity of thalamic subregions after basal ganglia stroke
- Arterial and Venous Thromboembolism Associated With Whippet-Induced Vitamin B12 Deficiency

The supramarginal gyrus is located just anterior to the angular gyrus allowing these two structures (which compose the inferior parietal lobule) to form a multimodal complex that receives somatosensory, visual, and auditory inputs from the brain.

Anteriorly it merges with the inferior aspect of the postcentral gyrus.

Although the supramarginal gyrus isn't considered a major portion of the language circuit, it still works with the angular gyrus to attempt to link words with meanings. It is also bound caudally by the lateral sulcus, one of the most prominent structures found in the brain.

The sylvian fissure ends in the supramarginal gyrus.

This area of the brain is also known as Brodmann area 40.

Blood supply

The main blood supply is via the middle cerebral artery.

Variant anatomy

The inferior end of the postcentral gyrus can be partitioned to form an accessory presupramarginal gyrus posteriorly [1].

Important functions

It is probably involved with speech perception and processing, and lesions in it may cause receptive aphasia.

The supramarginal gyrus is part of the somatosensory association cortex, which interprets tactile sensory data and is involved in perception of space and limbs location. It is also involved in identifying postures and gestures of other people, and is thus a part of the mirror neuron system.

The right-hemisphere supramarginal gyrus appears to play a central role in controlling our empathy towards other people. When this structure isn't working properly or when we have to make very quick judgments, our empathy becomes severely limited.

Research has shown that disrupting the neurons in the right supramarginal gyrus causes humans to project our emotions on others, inhibiting our ability to be empathetic. In addition, this disruption also causes people to be more egocentric, mainly because they aren't able to perceive the emotions of those around them.

Both the left and right supramarginal gyri of healthy, right-handed individuals are shown to be active when making phonological word choices.

Individuals who had lesions to the left hemisphere had more difficulty than those with lesions to the right hemisphere, reinforcing the dominance of the left hemisphere in language.

Right Supramarginal gyrus

see Right Supramarginal gyrus.

1)
Naidich TP, Castillo M, Cha S et-al. Imaging of the Brain,Expert Radiology Series,1. Saunders. (2012) ISBN:1416050094.