Brain Anatomy

**Dorsal view**

- Postcentral sulcus
- Postcentral gyrus
- Central sulcus
- Precentral gyrus
- Precentral sulcus
- Middle frontal gyrus
- Superior frontal sulcus
- Superior frontal gyrus
- Interhemispheric fissure
- Precentral gyrus
- Central sulcus
- Lateral sulcus
- Supramarginal gyrus
- Interparietal sulcus
- Angular gyrus
- Superior parietal lobule
- Cingulate sulcus (pars marginalis)
- Transverse occipital sulcus
- Parietooccipital sulcus
- Superior occipital gyrus
- Occipital lobe
- Parietal lobe
- Frontal lobe

**Ventral view**

- Middle temporal sulcus
- Middle temporal gyrus
- Gyrus rectus
- Interhemispheric fissure
- Olfactory sulcus
- Olfactory bulb
- Orbital gyrus
- Optic nerve (II)
- Optic chiasm
- Optic tract
- Uncus
- Parahippocampal gyrus
- Collateral sulcus
- Cerebellum
Brain Anatomy

Lateral view

Medial view
### METHODS OF ASSESSING BRAIN ANATOMY

<table>
<thead>
<tr>
<th>Method</th>
<th>Information Provided</th>
<th>Spatial Resolution</th>
<th>Temporal Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT (computerized axial tomography)</td>
<td>Anatomical image of brain density</td>
<td>0.5–1.0 cm</td>
<td>Not available</td>
</tr>
<tr>
<td>MRI (magnetic resonance imaging)</td>
<td>Anatomical image of the distribution of a certain substance, such as water or fat</td>
<td>1 mm</td>
<td>Not available</td>
</tr>
</tbody>
</table>

### METHODS OF ASSESSING BRAIN PHYSIOLOGY

#### Functional Brain Imaging

<table>
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</thead>
<tbody>
<tr>
<td>PET (positron emission tomography)</td>
<td>Functional image of physiological activity for various substances, including glucose, oxygen, and neurotransmitters</td>
<td>5–10 mm</td>
<td>40 seconds–1 hour</td>
</tr>
<tr>
<td>fMRI (functional MRI)</td>
<td>Functional image of relative blood oxygenation or blood flow</td>
<td>3–7 mm</td>
<td>2 seconds</td>
</tr>
</tbody>
</table>

#### Methods of Assessing Electromagnetic Activity

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Single Cell</td>
<td>Electrical signal that provides information about the firing rate of a cell</td>
<td>1/100th mm</td>
<td>1–2 Milliseconds (1 thousandth of a second)</td>
</tr>
<tr>
<td>EEG (electroencephalography)</td>
<td>Electrical signal that provides information about the summed post-synaptic dendritic activity (typically provided in frequency, Hz)</td>
<td>Poor</td>
<td>1–2 Milliseconds</td>
</tr>
<tr>
<td>ERP (event-related potentials)</td>
<td>Electrical signal that provides a record of the averaged electrical activity that is time-locked to an event</td>
<td>Poor</td>
<td>1–2 Milliseconds</td>
</tr>
<tr>
<td>MEG (magnetoencephalography)</td>
<td>Magnetic potentials that provide information derived from the electrical activity of neurons</td>
<td>5 mm</td>
<td>1–2 Milliseconds</td>
</tr>
</tbody>
</table>

#### Optical Imaging

<table>
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<tr>
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<th>Temporal Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow Signal (metabolic)</td>
<td>Laser light provides information on the concentration of oxygenated and deoxygenated blood</td>
<td>1–5 mm</td>
<td>1–2 seconds</td>
</tr>
<tr>
<td>Fast Signal–EROS (event-related optical signal)</td>
<td>Laser light provides information on the deformation of neurons that accompanies neuronal firing</td>
<td>1–5 mm</td>
<td>1–2 milliseconds</td>
</tr>
</tbody>
</table>

### METHODS OF MODULATING BRAIN ACTIVITY

<table>
<thead>
<tr>
<th>Method</th>
<th>Means of Modulating Activity</th>
<th>Spatial Resolution</th>
<th>Temporal Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMS (transcranial magnetic stimulation)</td>
<td>Pulsed magnetic field induces an electric field causing neurons to fire in a random pattern</td>
<td>Currently ambiguous, probably 10–15 mm</td>
<td>Currently ambiguous, probably 20–50 ms</td>
</tr>
</tbody>
</table>
Brodmann Areas

Lateral view

Medial view