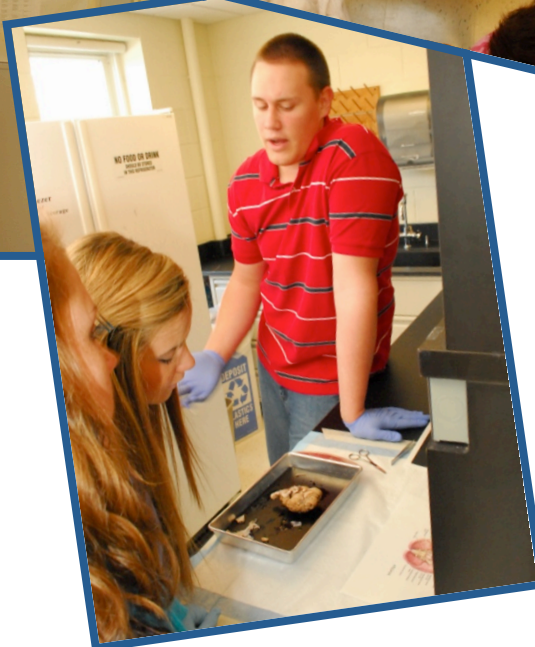




UNIVERSITY OF NEW ENGLAND

Center for Excellence
in the Neurosciences

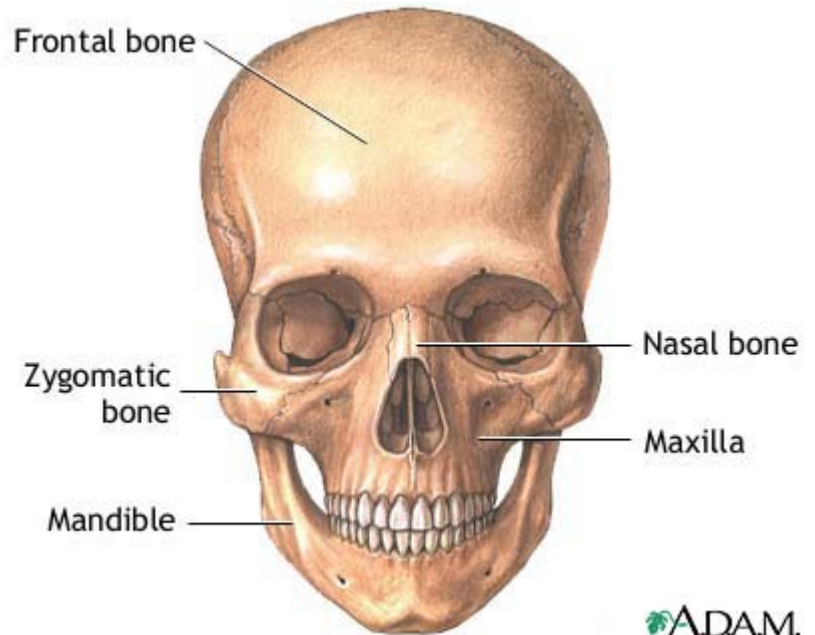
CEN Outreach Neuroanatomy & Disease



Neuroanatomy

Skull Anatomy: Poster/Slideshow and/or Human Skull

- Frontal Bone
- Temporal Bones (2)
- Parietal Bones (2)
- Occipital Bone
- Coronal Suture
- Sagittal Suture
- Squamous Suture



Subcranial Anatomy: Poster/Slideshow

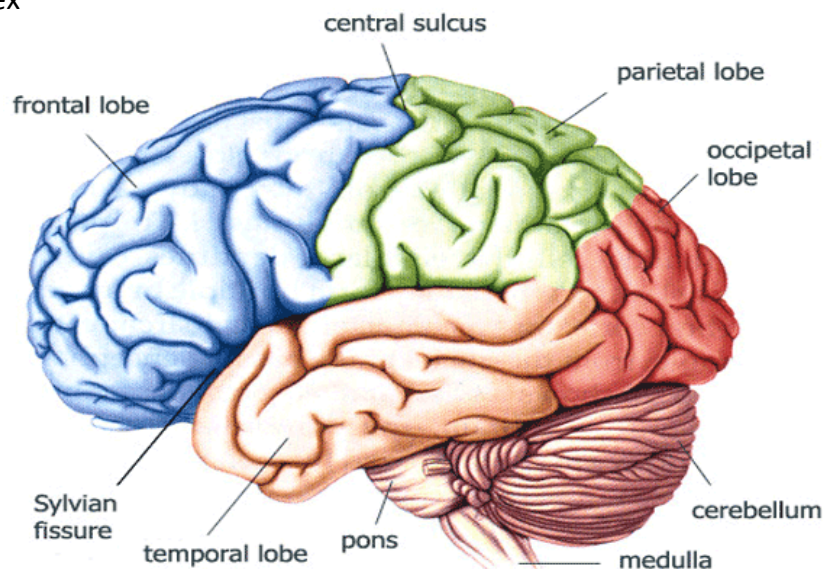
- Dura Mater
- Arachnoid Mater
- Pia Mater

Brain Anatomy: Human Brain

- Hindbrain/Brainstem
- Cerebellum
- Midbrain
- Forebrain
- 4 Cerebral Lobes: Frontal, Parietal, Temporal, Occipital
- Sulci, Central Sulcus
- Gyri

Cerebral Cortex: Poster/Slideshow and/or Model

- Premotor Cortex
- Supplementary Motor Cortex
- Somatic Motor Cortex
- Somatic Sensory Cortex
- Auditory Cortex
- Visual Cortex



Neuroanatomy Continued

Midsagittal Section: Mid-sagittal brain and/or Poster/Slideshow

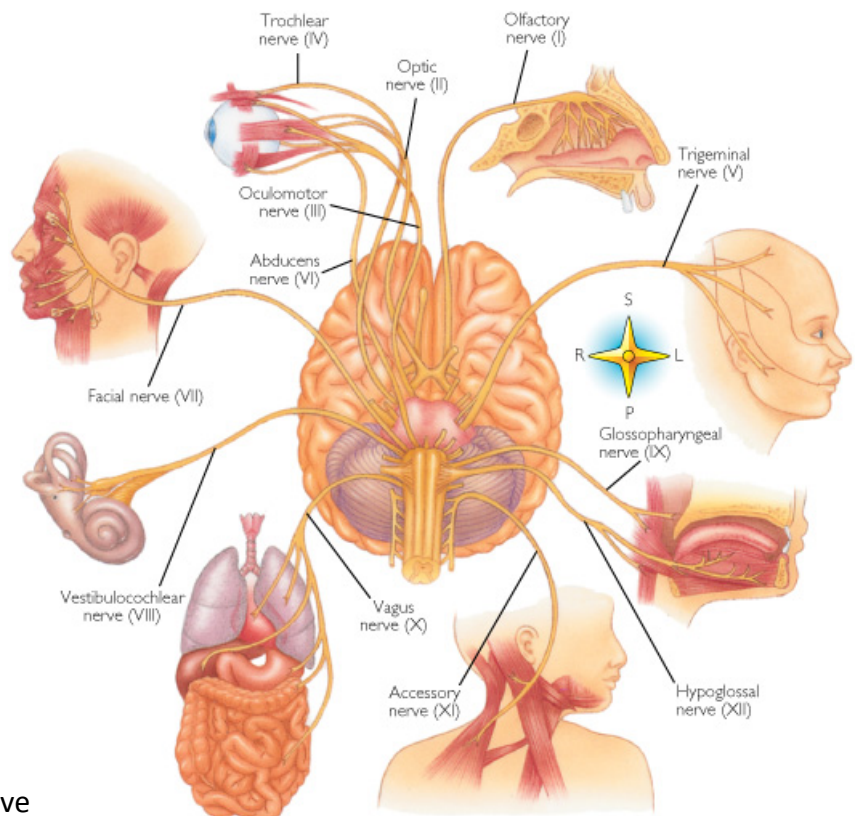
- Cerebral Cortex
- Corpus Callosum
- Lateral Ventricle
- Third Ventricle
- Cerebral Aqueduct
- Fourth Ventricle
- Thalamus
- Hypothalamus
- Limbic System – Hippocampus and Amygdala
- Midbrain
- Pons
- Medulla Oblongata
- Cerebellum

Coronal Section: Poster/Slideshow

- Gyri and Sulci
- Lateral Ventricles
- Third Ventricle
- Longitudinal Fissure
- Lateral Fissure
- Corpus Callosum
- Hippocampus
- Amygdala
- Gray Matter
- White Matter

Brainstem: Human Brain

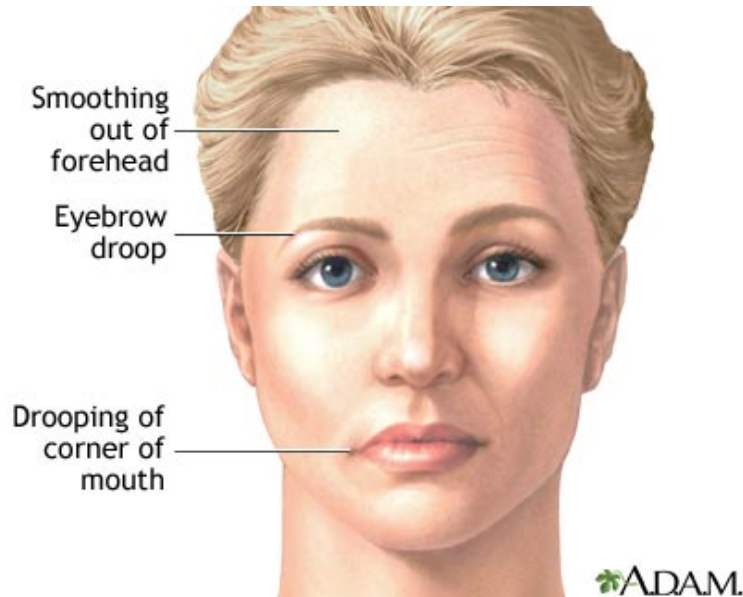
- Midbrain
- Pons
- Medulla
- Cranial Nerve I: Olfactory Nerve
- Cranial Nerve II: Optic Nerve (Optic Canal)
- Cranial Nerve III: Oculomotor Nerve
- Cranial Nerve IV: Trochlear Nerve
- Cranial Nerve V: Trigeminal Nerve
- Cranial Nerve VI: Abducent Nerve
- Cranial Nerve VII: Facial Nerve
- Cranial Nerve VIII: Vestibulocochlear Nerve
- Cranial Nerve IX: Glossopharyngeal Nerve
- Cranial Nerve X: Vagus Nerve
- Cranial Nerve XI: Spinal Accessory Nerve
- Cranial Nerve XII: Hypoglossal Nerve



Neuroanatomy Continued

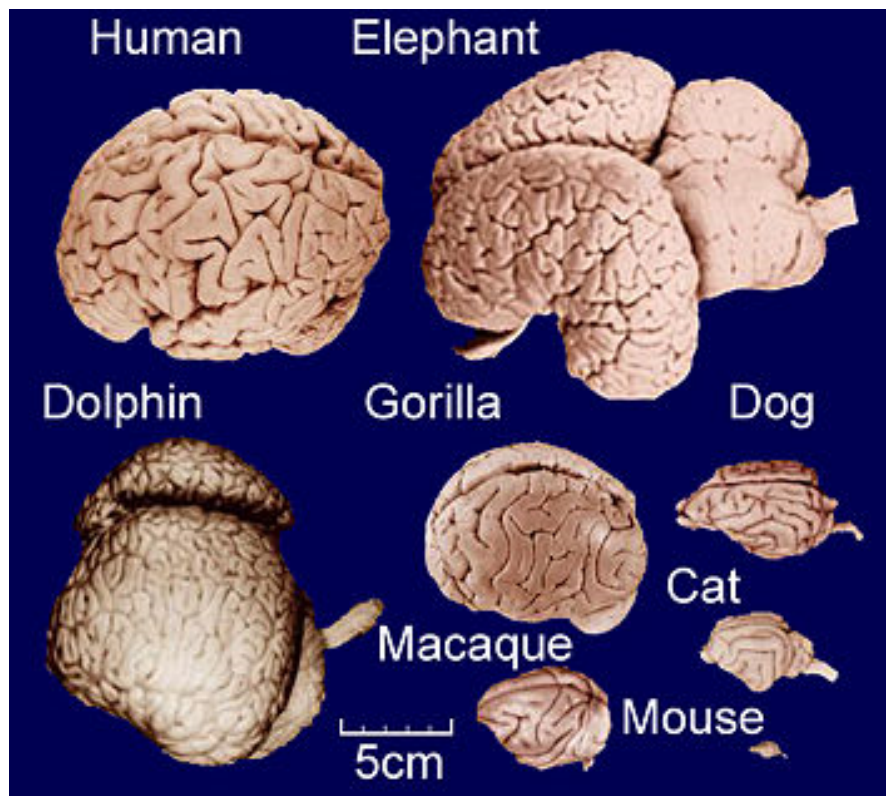
Case study: A patient presents with unilateral facial paralysis. She is unable to close her left eye, and when asked to smile the left corner of her mouth does not rise. Which cranial nerve is implicated?

(Facial Nerve, CNVII)



Compare Mammalian Brains: Poster/Slideshow

Human
Elephant
Dolphin
Gorilla
Dog
Mouse



Pathology

Alzheimer's Disease: Poster/Slideshow

Case Study: A 73-year-old woman was brought in for a neurological evaluation by her brother because of a 3-year history of memory impairment. She had completed high school and worked in a clerical position until her retirement in 1985. She had lived alone and maintained her own home and financial affairs since the death of her husband in 1980. The brother had begun to notice gradually worsening memory impairment and difficulty finding words, but the patient became angry at the suggestion that she may have a progressive impairment. Others had noted a decline in housekeeping and financial affairs, but she had no complaints.

(<http://www.med.harvard.edu/aanlib/cases/case3/case.html>)

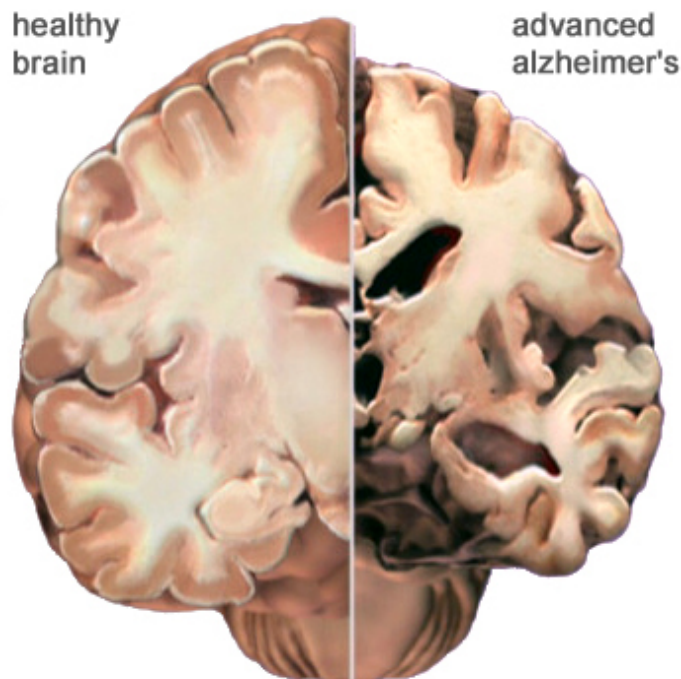
Symptoms:

Dementia symptoms including but not limited to difficulty with:

- Emotional behavior or personality
- Language
- Memory
- Perception
- Thinking and judgment (cognitive skills)

Pathophysiology:

- Loss of neurons and synapses in cerebral cortex
- Gross atrophy
- Degeneration of temporal and parietal lobes
- Microscopy: amyloid deposits and neurofibrillary tangles



Pathology Continued

Hydrocephalus: Poster/Slideshow

“Water on the Brain”

Build-up of fluid (CSF) inside the skull, which causes brain swelling

Causes:

- The flow of CSF is blocked

- Your brain makes too much CSF

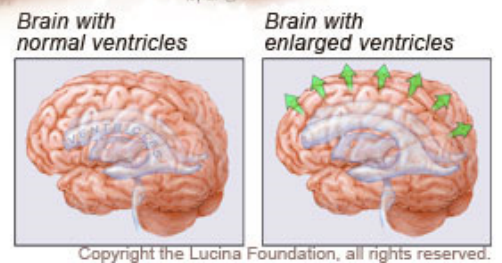
- CSF is not absorbed into the blood properly

Results in increased intracranial pressure

Typically found in infants and children

Without treatment, 60% will die

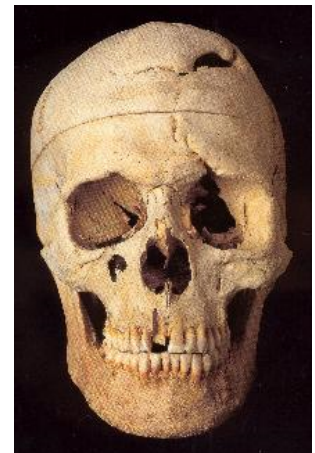
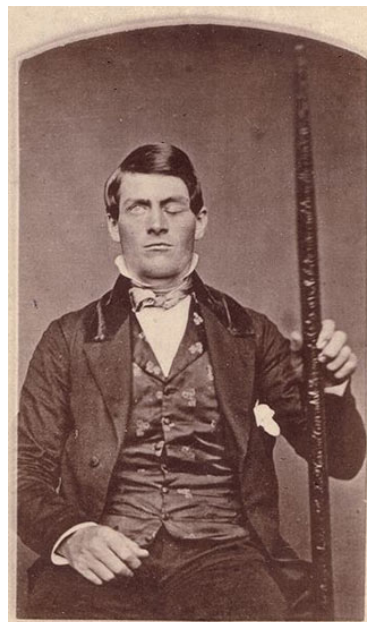
With treatment (surgery, antibiotics) may have intellectual deficits



Phineas Gage: Poster/Slideshow and/or Human Brain to demonstrate frontal lobe

Railroad foreman known for his improbable survival in which an iron rod was driven completely through his head

Damaged much of his frontal lobe - emotion and decision making changes



Pathology Continued

Alcohol: Poster/Slideshow

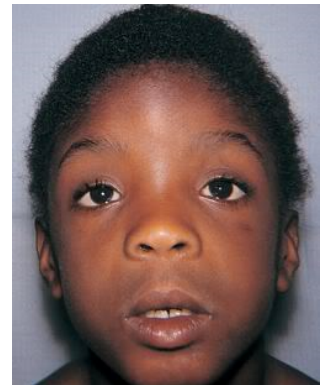
Symptoms:

- Difficulty walking (ataxia)
- Blurred vision
- Slurred Speech
- Slow reaction times
- Memory loss



Wernicke-Korsakoff Syndrome

- Mental confusion
- Ataxia
- Paralysis of oculomotor muscles
- Difficulty with muscle coordination
- Korsakoff's psychosis



Fetal Alcohol Syndrome

- Damage of alcohol on the developing brain

Subdural Hematoma: Poster/Slideshow

- Bleeding between the dura mater and the brain
- Leads to increased pressure on the brain
- May display neurological symptoms: Slurred speech, confusion, loss of consciousness

Epidural Hematoma: Poster/Slideshow

- Bleeding between the skull and dura mater
- Leads to increased pressure on the brain
- Also may display neurological symptoms
- Treatment: surgery to relieve the pressure and stop the bleeding

