

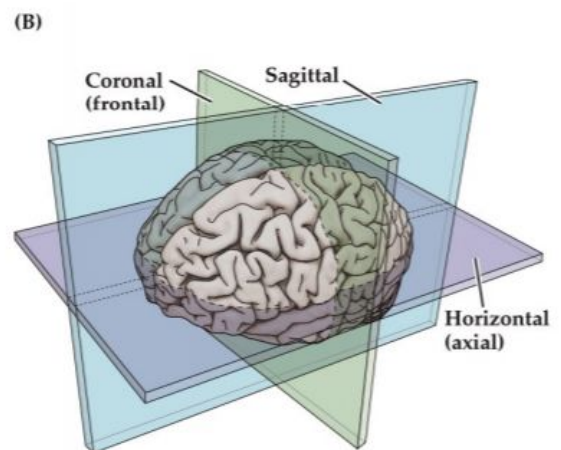
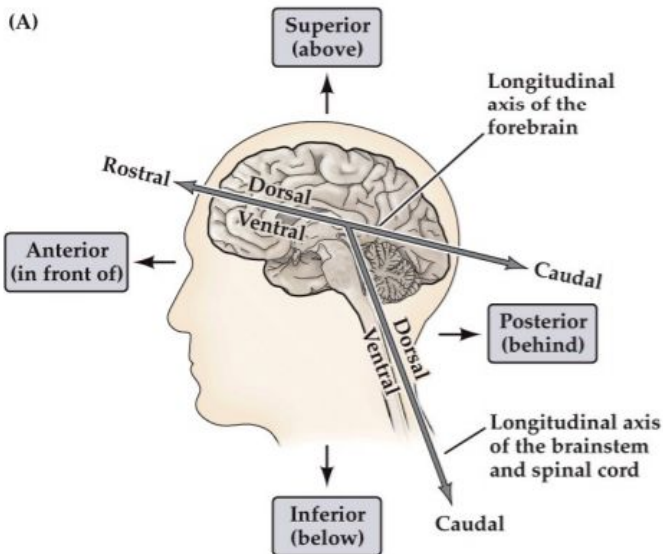
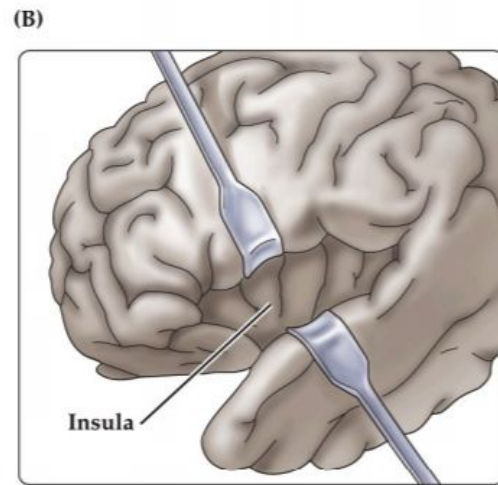
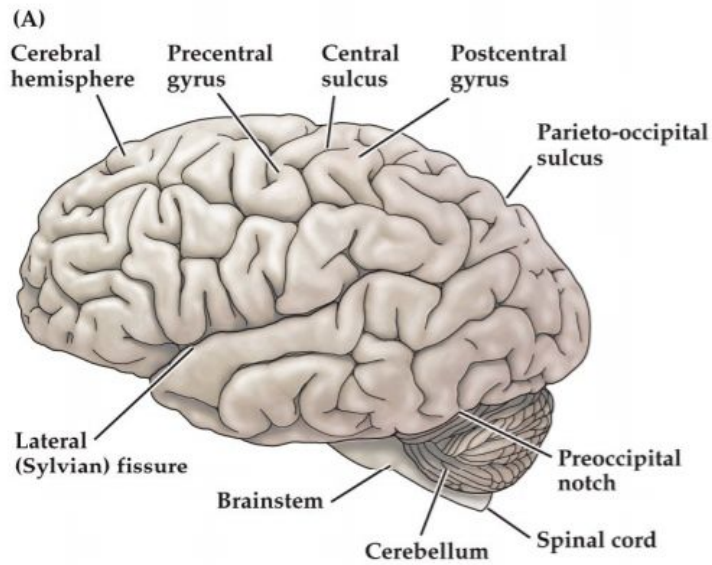
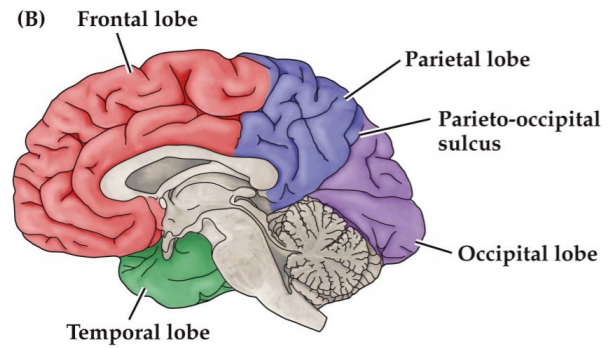
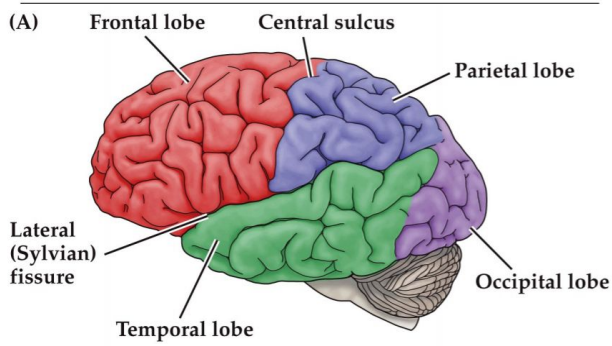
COGS1000: Introduction to Neuroscience I

Semester 1 2020

Topics

Basic Principles of Brain Organisation & Neuroanatomy
Electrical Signals of Nerve Cells
Voltage-Dependent Membrane Permeability
Ion Channels & Transporters
Vision: The Eye
Central Visual Pathways
Lower Motor Neuron Circuits & Motor Control
Upper Motor Neuron Control of the Brainstem & Spinal Cord
Eye Movements & Sensorimotor Integration
Cognitive Functions & the Organisation of the Cerebral Cortex
Speech & Language

Basic Principles of Brain Organisation & Neuroanatomy



- Neural systems in turn serve one of three general purposes: Sensory systems report information about the state of the organism and its environment; motor systems organise and generate actions; and associational systems provide “higher-order” brain functions such as perception, attention, memory, emotions, language, and thinking, all of which fall under the rubric of cognition.
- human genome comprises about 20,000 genes, of which some 14,000 (approximately 70%) are expressed in the developing or mature nervous system
- nerve cells are discrete entities, and that they communicate with one another by means of specialized contacts that are not sites of continuity between cells.
 - transfer of electrical signals via reflex pathways, called these specialized contacts synapses
- Dorsal - top / ventral - bottom
- Coronal - frontal, horizontal - axial, sagittal - middle
- Fissure - not connected / Sulcus - connected
- Central nervous system(CSN) - brain and the spinal cord
- Peripheral nervous system(PSN) - network of nerves that course through the body. The nerves and nerve cells outside of the brain and spinal cord.
- Frontal lobe
 - cognitive functions
 - motor functions
 - language function in the dominant hemisphere
- Parietal lobe - primary sensory cortex
 - Attention
 - Space perception
 - Mathematics
- Occipital lobe
 - Visual
 - Sight and recognition
- Temporal lobe
 - language in recessive hemisphere (wernicke) primary auditory cortex + association cortices, limbic system (emotion)
 - Reading
 - Face perception
 - Object perception
 - Memory
- Cerebellum
 - Skilled movement
 - memory
- Cerebrum
 - sensation, perception, cognition, speech, movement, learning and memory.
- Insula - inside brain, under all other lobes
 - disgust (physical, moral, sexual)
- Medulla - brainstem connects to spinal cord

