Definition Slides

Lesion

= tissue destruction; a brain lesion is a naturally or experimentally caused destruction of brain tissue.

Electroencephalogram (EEG)

= an amplified recording of the waves of electrical activity that sweep across the brain's surface. These waves are measured by electrodes placed on the scalp.

CT (computed tomography) Scan

= a series of X-ray photographs taken from different angles and combined by computer into a composite representation of a slice through the body.

- Also called CAT scan.

PET (positron emission tomography) Scan

= a visual display of brain activity that detects where a radioactive form of glucose goes while the brain performs a given task.

MRI (magnetic resonance imaging)

= a technique that uses magnetic fields and radio waves to produce computer-generated images of soft tissue. MRI scans show brain anatomy.

fMRI (functional MRI)

= a technique for revealing bloodflow and, therefore, brain activity by comparing successive MRI scans. fMRI scans show brain function.

Brainstem

= the oldest part of the central core of the brain, beginning where the spinal cord swells as it enters the skull; the brainstem is responsible for automatic survival functions.

Medulla

= the base of the brainstem; controls heartbeat and breathing.

Reticular Formation

= a nerve network in the brainstem that plays an important role in controlling arousal.

Thalamus

= the brain's sensory switchboard, located on top of the brainstem; it directs messages to the sensory receiving areas in the cortex and transmits replies to the cerebellum and medulla.

Cerebellum

= the “little brain” at the rear of the brainstem; functions include processing sensory input and coordinating movement output and balance.

Limbic System

= doughnut-shaped neural system (including the hippocampus, amygdala, and hypothalamus) located below the cerebral hemispheres; associated with emotions and drives.

Amygdala

= two lima bean-sized neural clusters in the limbic system; linked to emotion.

Hypothalamus

= a neural structure lying below (hypo) the thalamus; it directs several maintenance activities (eating, drinking, body temperature), helps govern the endocrine system via the pituitary gland, and is linked to emotion and reward.

Cerebral Cortex

= the intricate fabric of interconnected neural cells covering the cerebral hemispheres; the body's ultimate control and information-processing center.

Glial Cells

= cells in the nervous system that support, nourish, and protect neurons.

Frontal Lobes

= portion of the cerebral cortex lying just behind the forehead; involved in speaking and muscle movements and in making plans and judgments.

Parietal Lobes

= portion of the cerebral cortex lying at the top of the head and toward the rear; receives sensory input for touch and body position.

Occipital Lobes

= portion of the cerebral cortex lying at the back of the head; includes areas that receive information from the visual fields.

Temporal Lobes

= portion of the cerebral cortex lying roughly above the ears; includes the auditory areas, each receiving information primarily from the opposite ear.

Motor Cortex

= an area at the rear of the frontal lobes that controls voluntary movements.

Sensory Cortex

= area at the front of the parietal lobes that registers and processes body touch and movement sensations.

Association Areas

= areas of the cerebral cortex that are not involved in primary motor or sensory functions; rather, they are involved in higher mental functions such as learning, remembering, thinking, and speaking.

Aphasia

= impairment of language, usually caused by left hemisphere damage either to Broca's area (impairing speaking) or to Wernicke's area (impairing understanding).

Broca’s Area

= controls language expression that directs the muscle movements involved in speech.

Wernicke's Area

= controls language reception – a brain area involved in language comprehension and expression; usually in the left temporal lobe.

Plasticity

= the brain's ability to change, especially during childhood, by reorganizing after damage or by building new pathways based on experience.

Neurogenesis

= the formation of new neurons.

Corpus Callosum

= the large band of neural fibers connecting the two brain hemispheres and carrying messages between them.

Split Brain

= a condition resulting from surgery that isolates the brain's two hemispheres by cutting the fibers (mainly those of the corpus callosum) connecting them.

Consciousness

= our awareness of ourselves and our environment.

Cognitive Neuroscience

= the interdisciplinary study of the brain activity linked with cognition (including perception, thinking, memory and language).

Dual Processing

=the principle that information is often simultaneously processed on separate conscious and unconscious tracks.