Practical anatomy :

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Nervous System : Part \_2\_

Regions of the Brain

 Cerebellum – coordination of movement and aspects of motor

learning

 Cerebrum – conscious activity including perception, emotion,

thought, and planning

 Thalamus – Brain’s switchboard – filters and then relays

information to various brain regions

 Medulla – vital reflexes as heart beat and respiration

 Brainstem – medulla, pons, and midbrain (involuntary

responses) and relays information from spine to upper brain

 Hypothalamus– involved in regulating activities internal

organs, monitoring information from the autonomic nervous

system, controlling the pituitary gland and its hormones, and

regulating sleep and appetite.

Regions of the Brain

Cerebrum

 Is the largest portion of the brain encompasses about two-thirds of the brain

mass

 It consists of two hemispheres divided by a fissure – corpus callosum

 It includes the cerebral cortex, the medullary body, and basal ganglia.

cerebral cortex is the layer of the brain often referred to as gray matter

because it has cell bodies and synapses but no myelin

o The cortex (thin layer of tissue) is gray because nerves in this area lack the

insulation or white fatty myelin sheath that makes most other parts of the brain

appear to be white.

o The cortex covers the outer portion (1.5mm to 5mm) of the cerebrum and

cerebellum

o The cortex consists of folded bulges called gyri that create deep furrows or

fissures called sulci

o The folds in the brain add to its surface area which increases the amount of

gray matter and the quantity of information that can be processed.

Medullary body – is the white matter of the cerebrum and

consists of myelinated axons

o Commisural fibers – conduct impulses between the

hemispheres and form corpus callosum

o Projection fibers – conduct impulse in and out of the

cerebral hemispheres

o Association fibers – conduct impulses within the

hemispheres

 Basal ganglia – masses of gray matter in each

hemisphere which are involved in the control of voluntary

muscle movements.

Lobes of the Cerebrum

• Frontal – motor area involved in movement and in planning

& coordinating behavior

• Parietal – sensory processing, attention, and language

• Temporal – auditory perception, speech, and complex

visual perceptions

• Occipital – visual center – plays a role in processing visual

information

Special regions

 Broca’s area – located in the frontal lobe – important in

the production of speech

 Wernicke’s area – comprehension of language and the

production of meaningful speech

 Limbic System – a group of brain structures (aamygdala,

hippocampus, septum, basal ganglia, and others) that helpregulate the expression of emotions and emotional

memory

Lobes of the Cerebrum

Peripheral Nervous

System Cranial nerves

• 12 pair

• Attached to undersurface

of brain

Spinal nerves

• 31 pair

• Attached to spinal cord

 Somatic Nervous System (voluntary)

• Relays information from skin, sense organs & skeletal muscles to CNS

• Brings responses back to skeletal muscles for voluntary responses

 Autonomic Nervous System (involuntary)

• Regulates bodies involuntary responses

• Relays information to internal organs

• Two divisions

o Sympathetic nervous system – in times of stress

• Emergency response

• Fight or flight

o Parasympathetic nervous system – when body is at rest or with

normal functions §

• Normal everyday condition