

## Chapter 2: Biological Bases of Behavior

### The Organism as a Machine

reflex

### How the Nervous System is Studied

neurons

clinical observation

lesioned, ablated, transecting

intracranial recording

cannulas

neuroimaging instruments

CT scan (computerized tomography scan)

CAT scan (computerized axial tomography)

magnetic resonance imaging (MRI)

electroencephalography (EEG)

event-related potentials

positron emission tomography (PET) scan

functional MRI (fMRI) scan

### The Architecture of the Nervous System

ganglia

neural plate

neural tube

hindbrain, forebrain, midbrain, brain

central nervous system (CNS)

medulla pons

cerebellum

low-decerebrate animal

high-decerebrate animal

cortex

longitudinal fissure

subcortical structures

thalamus

hypothalamus

basal ganglia

Parkinson's disease

Huntington's disease

limbic system

afferent nerves

effectors

efferent nerves

cranial nerves

peripheral nervous system

somatic division

autonomic division (or autonomic nervous system)

pituitary gland

### The Cortex

convolutions

fissures

lobes

frontal, parietal

central fissure

temporal lobes

lateral fissure

occipital lobe

localization of function

phrenology

primary projection areas

primary sensory projection areas

primary motor projection area

contralateral control

somatosensory area

apraxias

agnosias

prosopagnosia

neglect syndrome

Gerstmann syndrome

aphasias

nonfluent aphasias

Broca's area

speech plans

fluent aphasias

Wernicke's area

dyslexia

prefrontal area

### One Brain or Two?

Lateralization

corpus callosum

response time

### Brain Functions and Neural Hierarchies

central pattern generators (CPG's)

disinhibition

### Building Blocks of the Nervous System: Neurons and Nerve Impulses

neurons

nerve impulses

dendrites, cell body (soma), axon

axonal branches

motoneuron

transduce

sensory neurons

interneurons

microcircuitry

glial cells

myelin

nodes of Ranvier

white and gray matter

oscilloscope

resting potential

excitation threshold

action potential

adequate stimulus

ion channels

ion pumps

propagation

multiple sclerosis (MS)

all-or-none law

### Interaction Among Nerve Cells

synapse

simple reflex

spinal animals

temporal summation  
spatial summation  
reciprocal inhibition  
acetylcholine  
neurotransmitters  
presynaptic neuron  
postsynaptic neuron  
axon terminals  
synaptic vesicles  
synaptic gap  
postsynaptic membrane  
synaptic reuptake  
acetylcholine (ACh)  
serotonin (5HT)  
glutamate  
GABA  
norepinephrine (NE)  
dopamine (DA)  
lock-and-key model  
primary messengers  
second messengers  
agonists  
antagonists  
precursor  
curare  
selective serotonin reuptake inhibitors (SSRI's)

### **Interactions Through the Bloodstream**

blood-brain barrier  
endocrine system  
endocrine glands  
pancreas, adrenal glands, pituitary  
hormones

### **Recovery from Brain Injury**

anomia  
collateral sprouts  
plasticity  
nerve growth factors