

If the *left* side of your brain controls the right side of your body, and the *right* side of your brain controls the left side of your body, then left-handed people must be the only ones in their right minds.

--W.C. Fields

## Nervous System

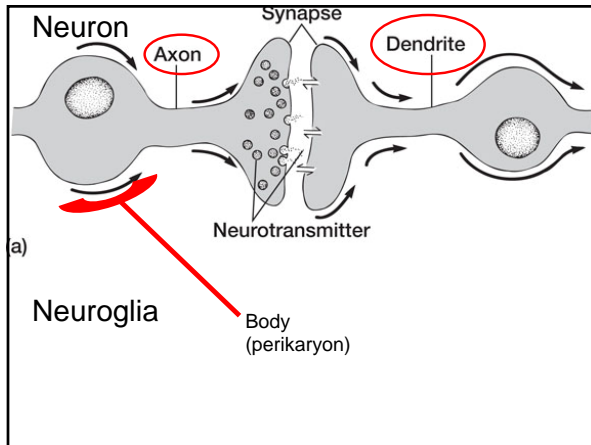
Conducting system—

Receives (sensory)  
receptors

Transmits (motor)  
effectors (chemical, mechanical)

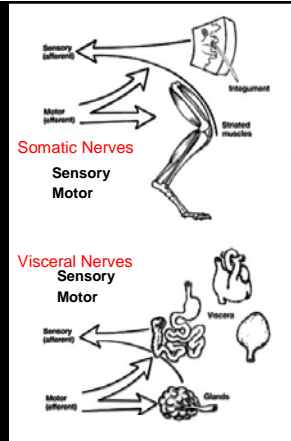
Components—

Central Nervous System (CNS)  
Peripheral Nervous System (PNS)

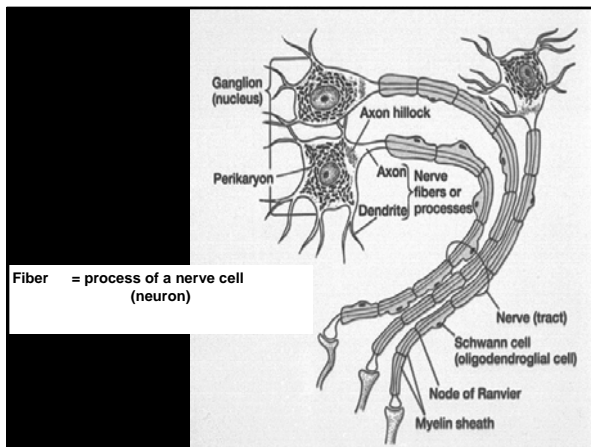


## Functional Categories

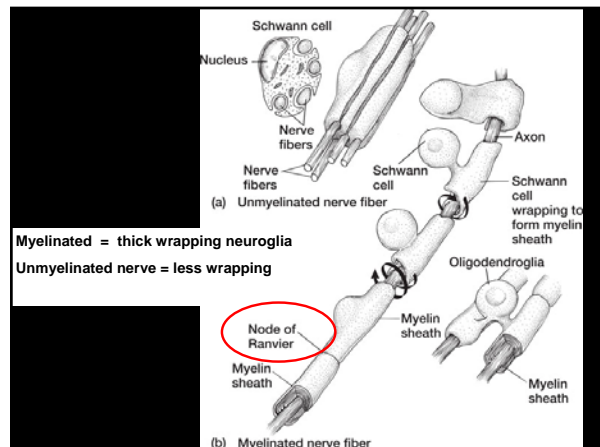
Sensory =  
Afferent



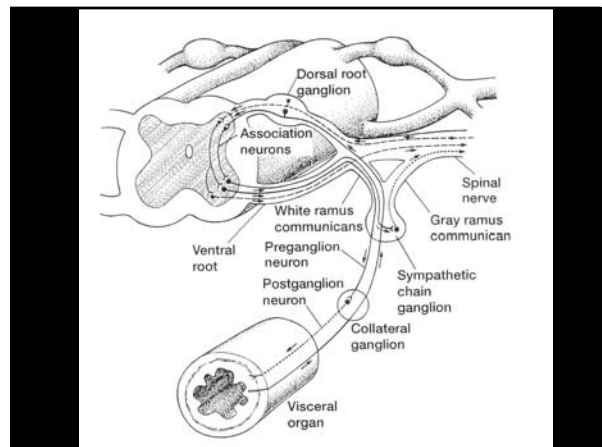
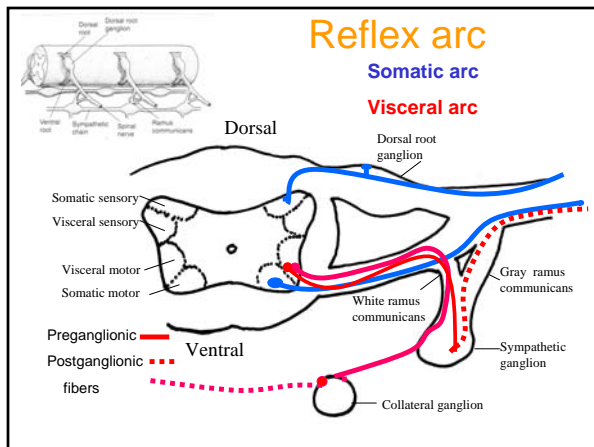
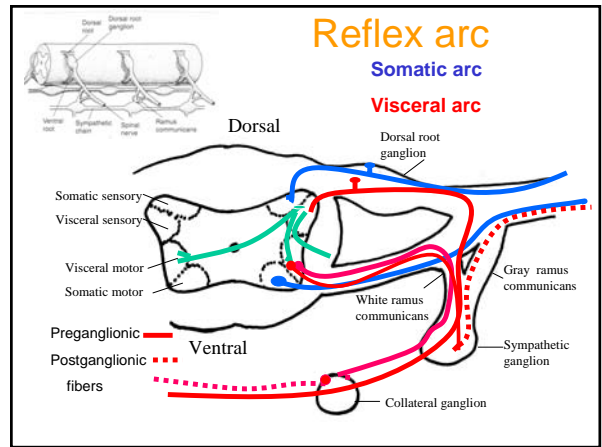
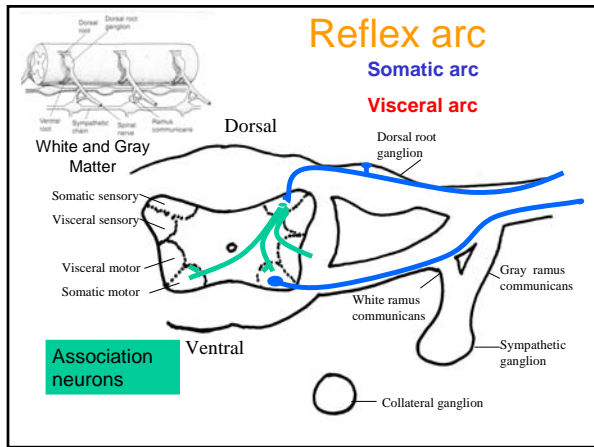
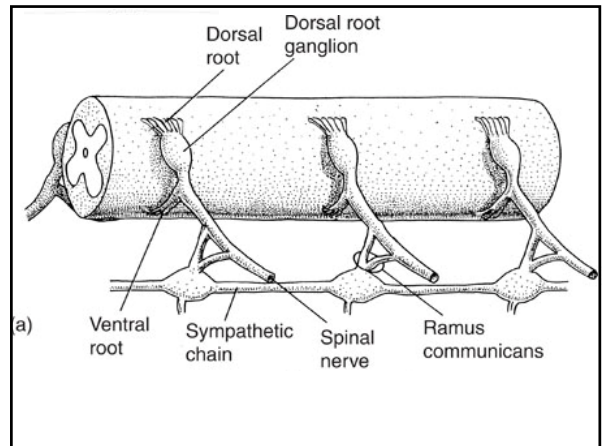
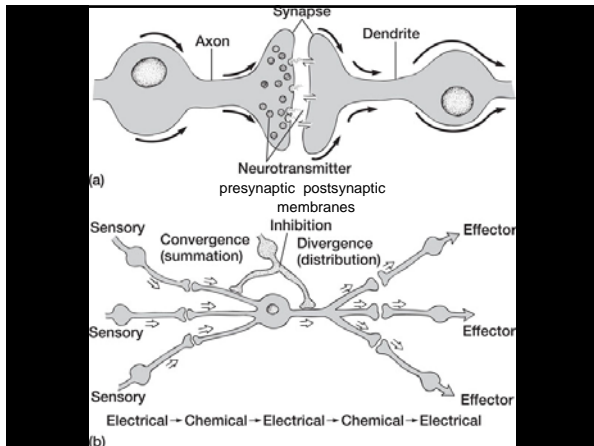
Motor =  
Efferent

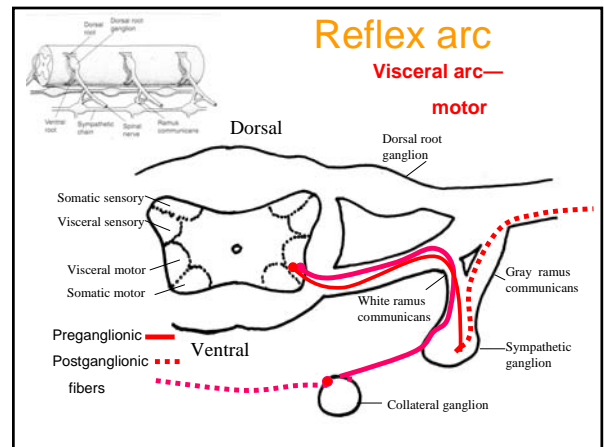
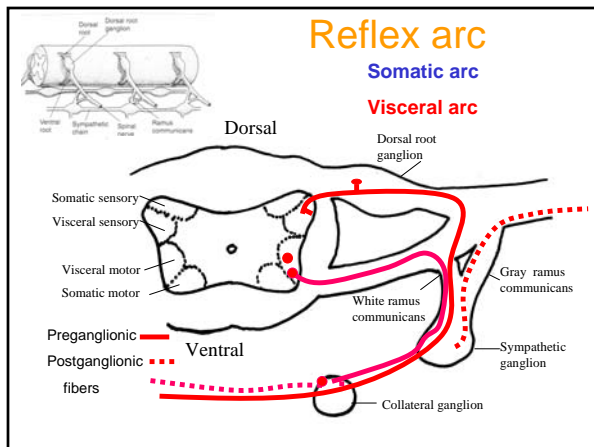
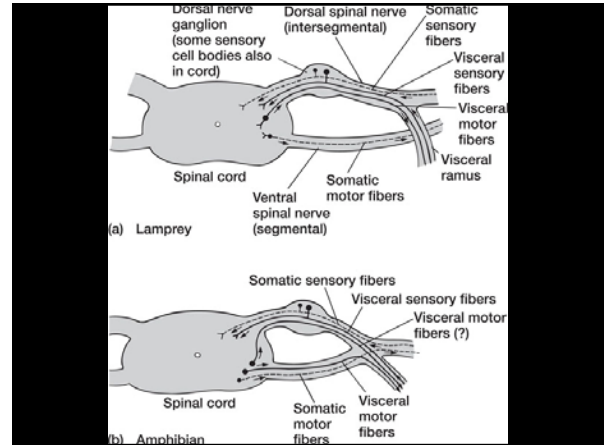
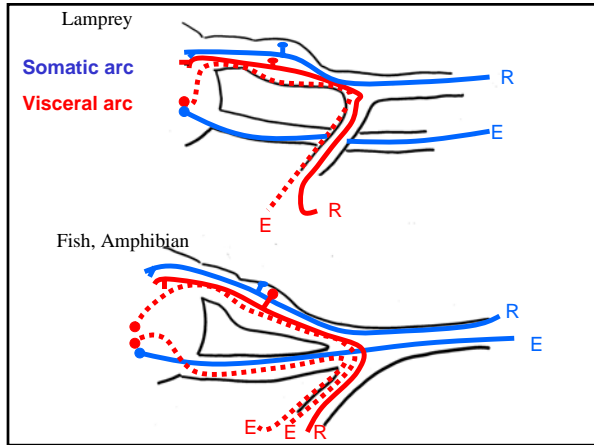
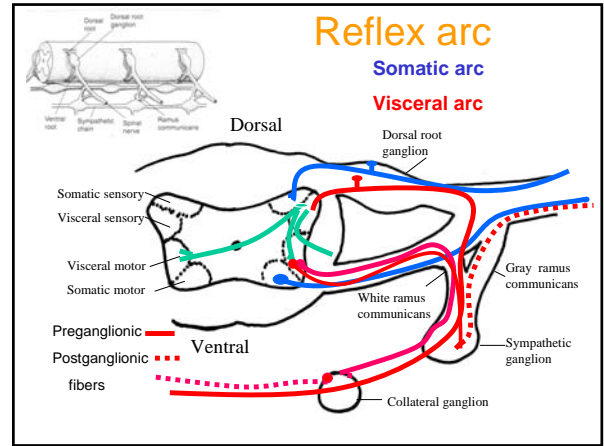
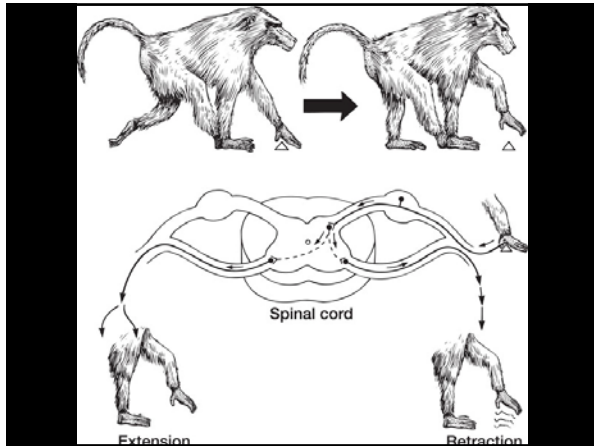


Fiber = process of a nerve cell (neuron)



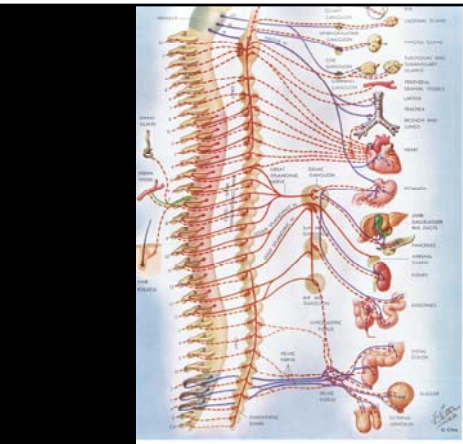
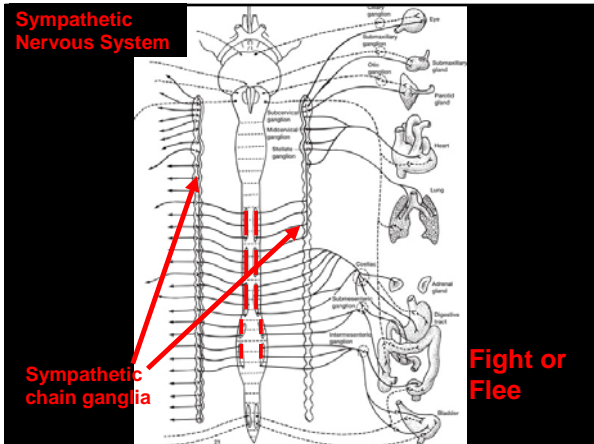
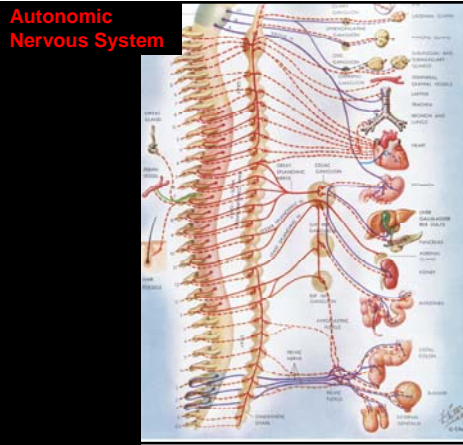
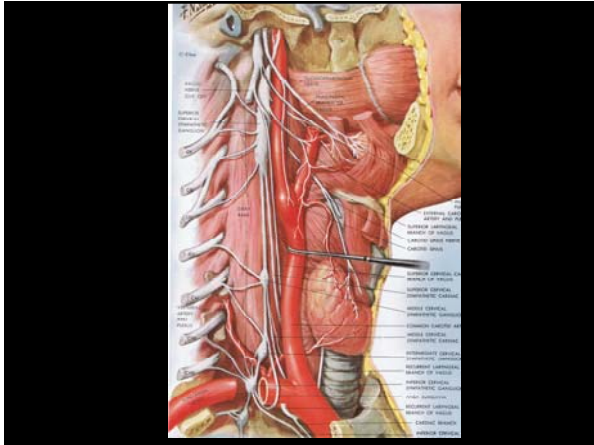
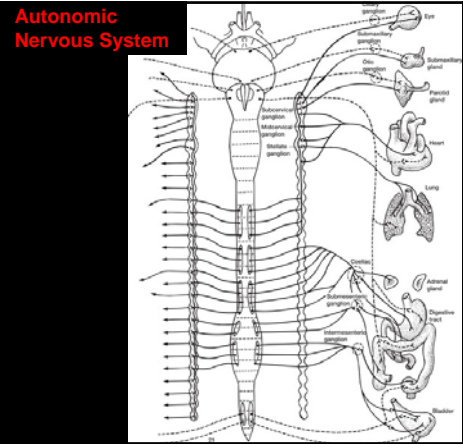
Myelinated = thick wrapping neuroglia  
Unmyelinated nerve = less wrapping





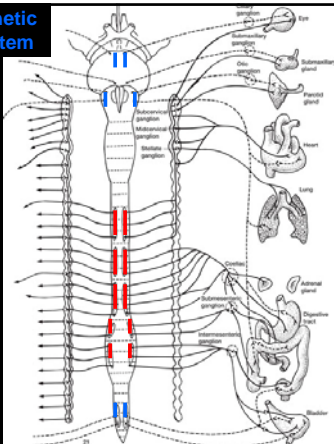
# Autonomic Nervous System

Define—visceral motor neurons  
ventral root  
pre- and post-ganglionic  
Two contrasting systems  
sympathetic  
parasympathetic

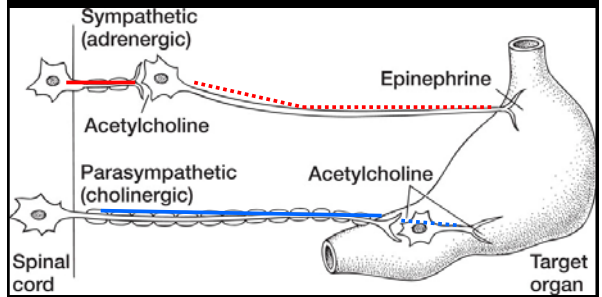


**Parasympathetic Nervous System**

Exceptions:  
Adrenal gland  
Peripheral bv  
Sweat glands



**Neurotransmitter**



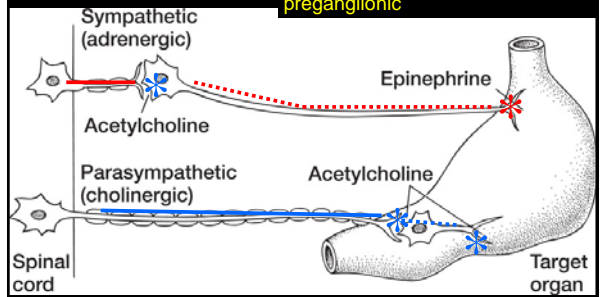
Preganglionic to Postganglionic

**Otto Loewi**

• 1873—1961

**Neurotransmitter**

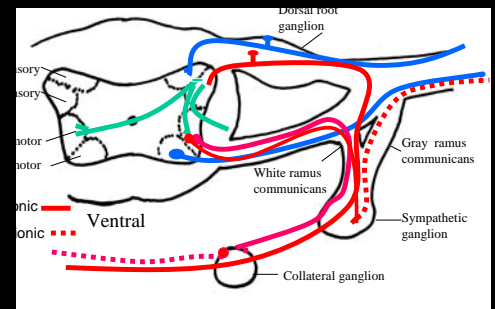
Adrenal gland—sympathetic, preganglionic



Preganglionic to Postganglionic

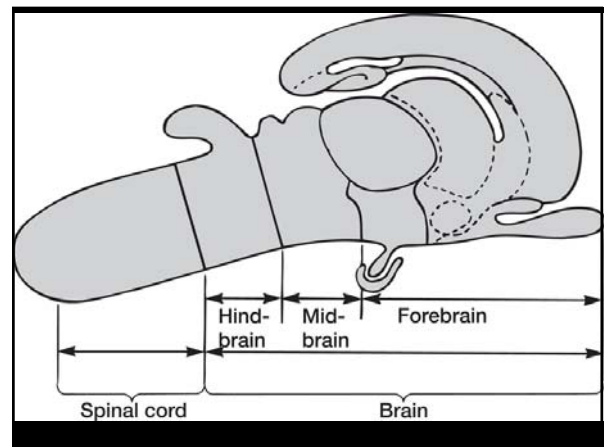
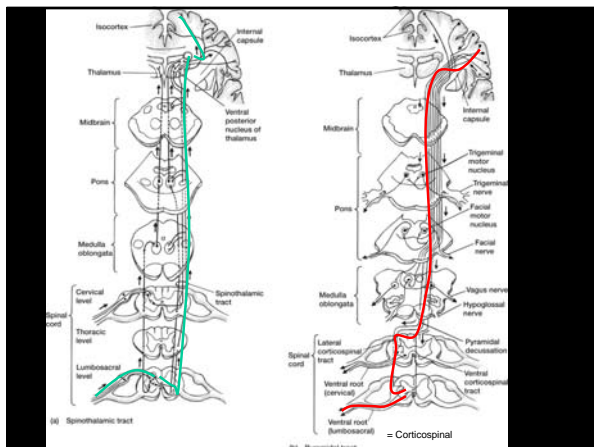
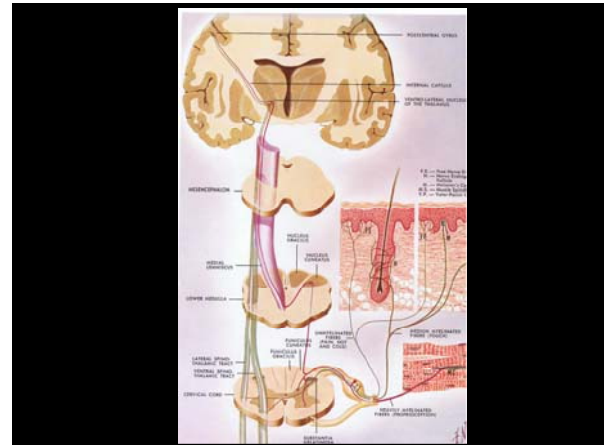
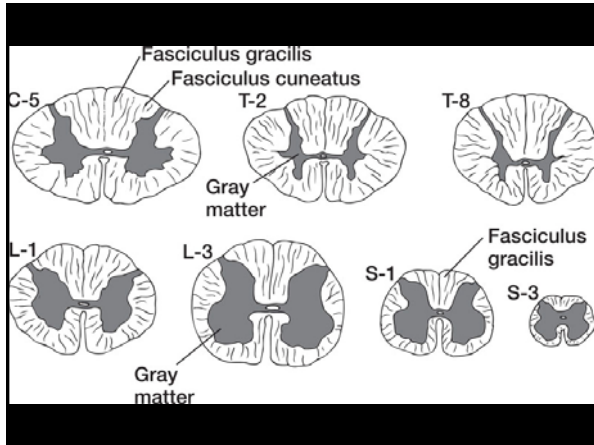
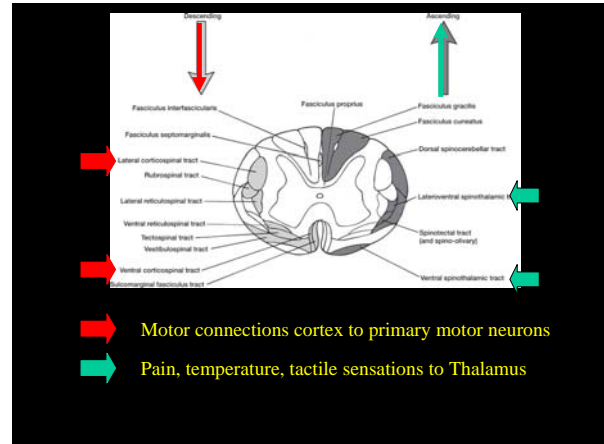
**Medical Implications**

Raynaud's Disease



## Types of Sensory Receptors

- Exteroceptors -- outside**
- Interoceptors -- inside**
- Proprioceptors -- special interoceptors**





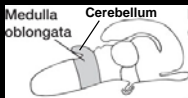
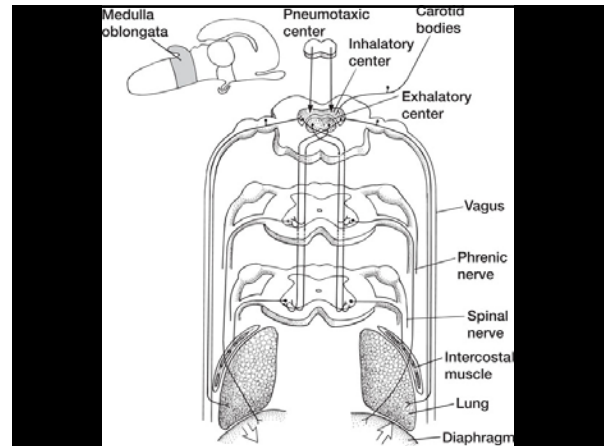
**Medulla oblongata**

**Functions**

- roots of cranial nerves
- ascending and descending pathways
- centers (visceral, auditory, proprioceptive)
  - (e.g. respiration, heart beat)

**Input**

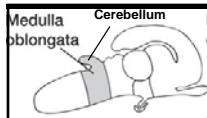
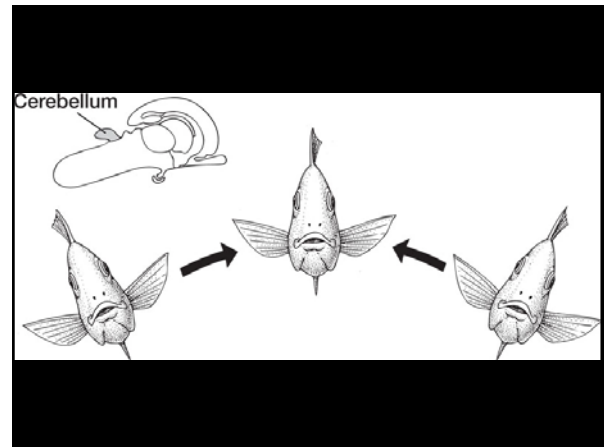
- sensory nerves, hypothalamus



**Cerebellum**

**Functions—monitors & modifies**

- Equilibrium (touch, vision, hearing, etc)



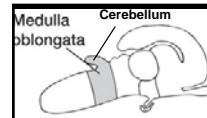
**Cerebellum**

**Functions—monitors & modifies**

- Equilibrium (touch, vision, hearing, etc)

**Refinement of motor action**

- Ataxia
- Dysmetria



**Cerebellum**

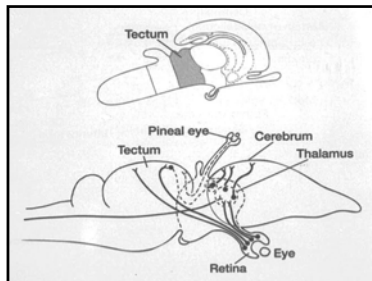
**Functions—monitors & modifies**

- Equilibrium (touch, vision, hearing, etc)

**Refinement of motor action**

**Evolution**

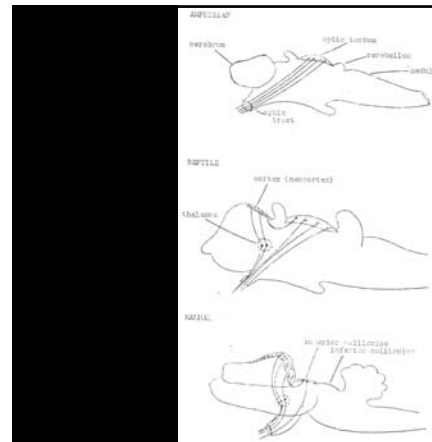
- fishes—acousticolateralis system
  - (lateral line system)
- tetrapods—proprioception from limbs, body



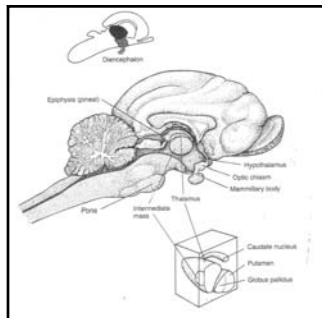
**OPTIC LOBES**  
(mesencephalon)

**Anatomy**  
 tectum—roof  
 sensory  
 tegmentum—floor  
 motor

**Evolution**  
 transfer forward  
**Blindsight**

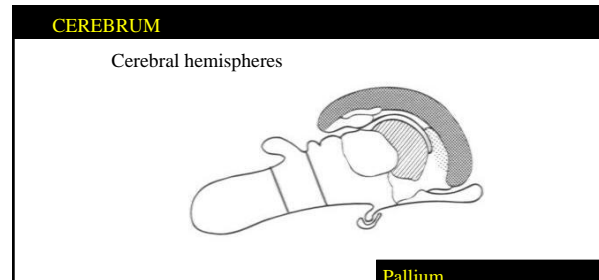


**Blindsight**



**THALAMUS**

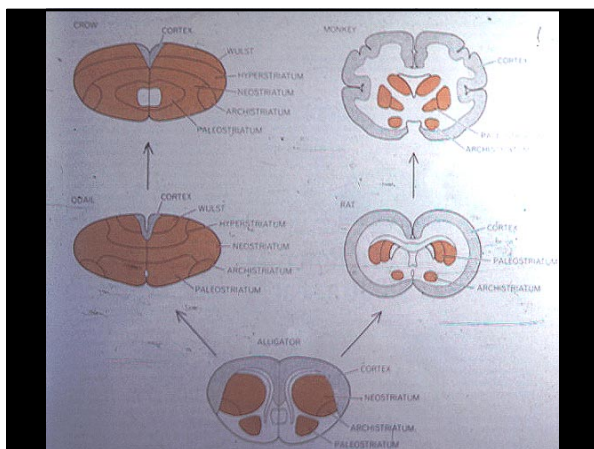
**Epithalamus**  
 pineal, habenular nucleus,  
 post. commissure  
**Hypothalamus**  
 visceral brain center  
 (temp., water, appetite,  
 emotion, other)  
**Thalamus proper**  
 relay center



**CEREBRUM**

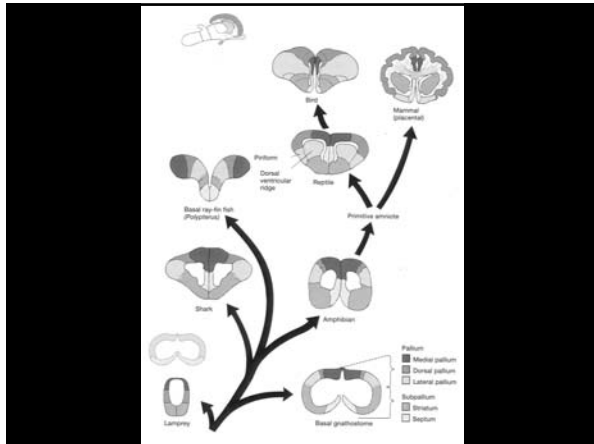
Cerebral hemispheres

**Pallium**  
 medial  
 dorsal  
 lateral  
**Subpallium**  
 Striatum  
 Septum



<b>Morphological</b>	out dated (tired)	Descriptive (wired)
<b>PALLIUM</b>		
Medial	----- Archipallium	(Hippocampus)
Dorsal	——— Neopallium	(Cerebral cortex)
Lateral	——— Paleopallium	(Piriform cortex)
<b>SUBPALLIUM</b>		
Striatum	——— Corpus striatum	(Basal nuclei)
Septum	——— Septum	(Septal nuclei)
	(limbic system)	





Morphological	out dated (tired)	Descriptive (wired)
<b>PALLIUM</b>		
Medial	----- Archipallium	(Hippocampus)
Dorsal	----- Neopallium	(Cerebral cortex)
Lateral	----- Paleopallium	(Piriform cortex)
<b>SUBPALLIUM</b>		
Striatum	----- Corpus striatum	(Basal nuclei)
Septum	----- Septum	(Septal nuclei)
	(limbic system)	

