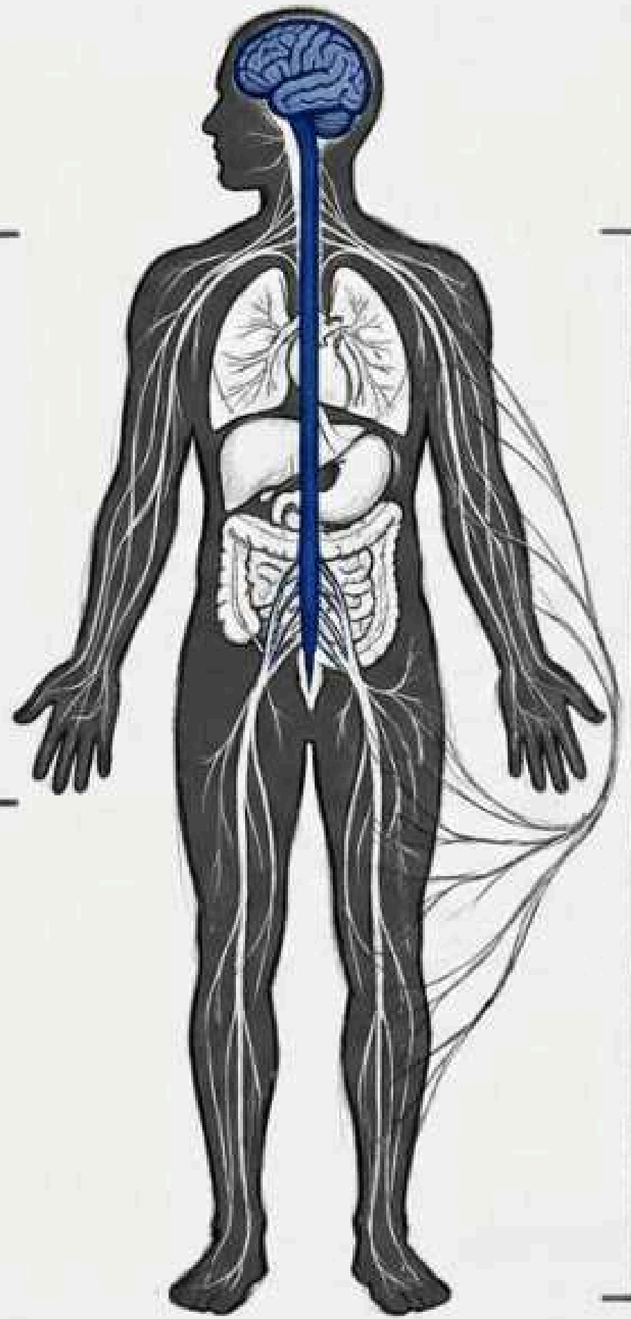
¶ 6.1

Central Nervous System (CNS)
The Command Centre

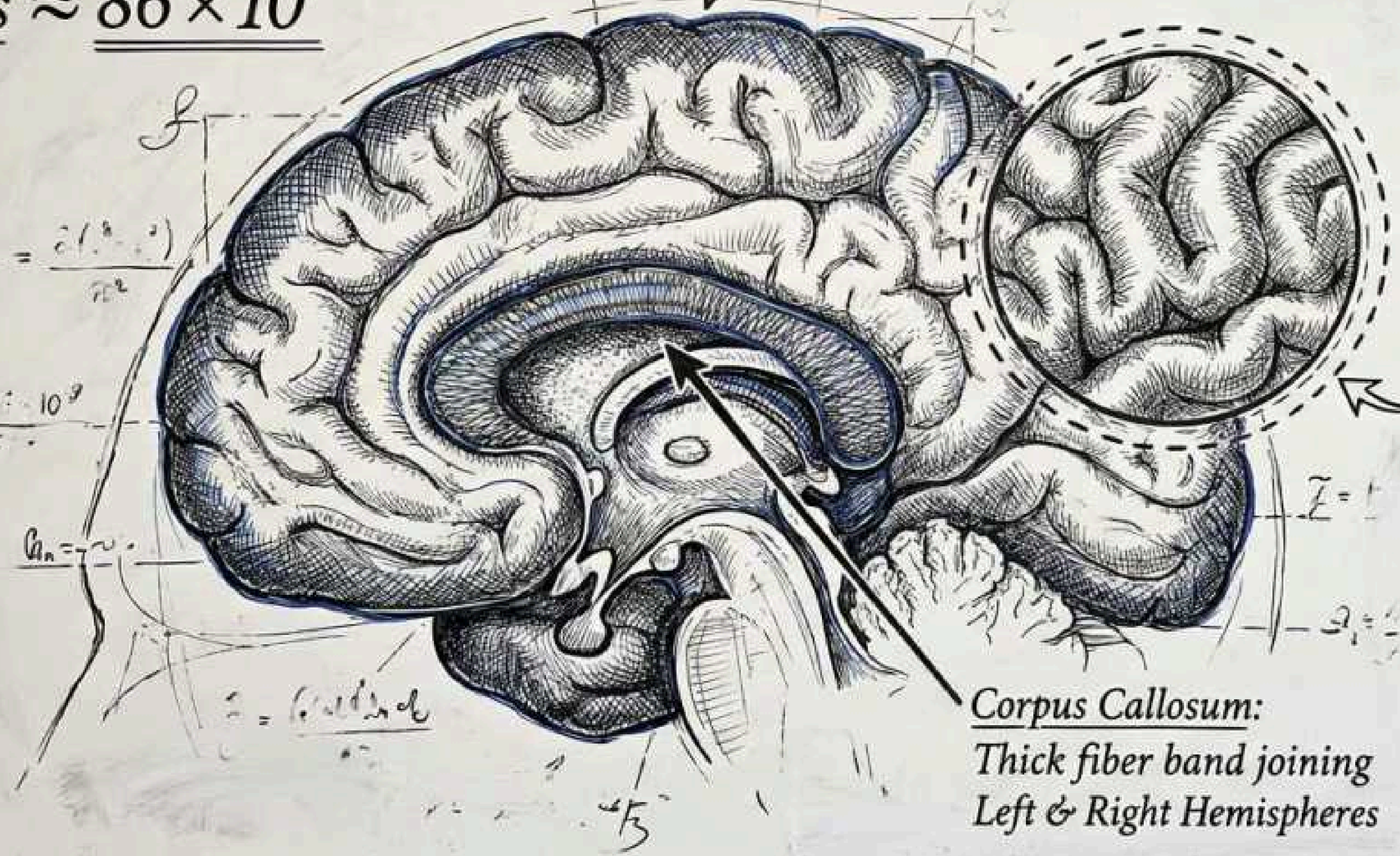


Peripheral Nervous System (PNS)
The Signal Relay (In & Out)

¶ 6.2

$$\text{Mass} \approx 1.5\,\text{kg}$$

$$\text{Neurons} \approx 86 \times 10^9$$



Cerebral Cortex: Grey matter
(Neuron cell bodies)

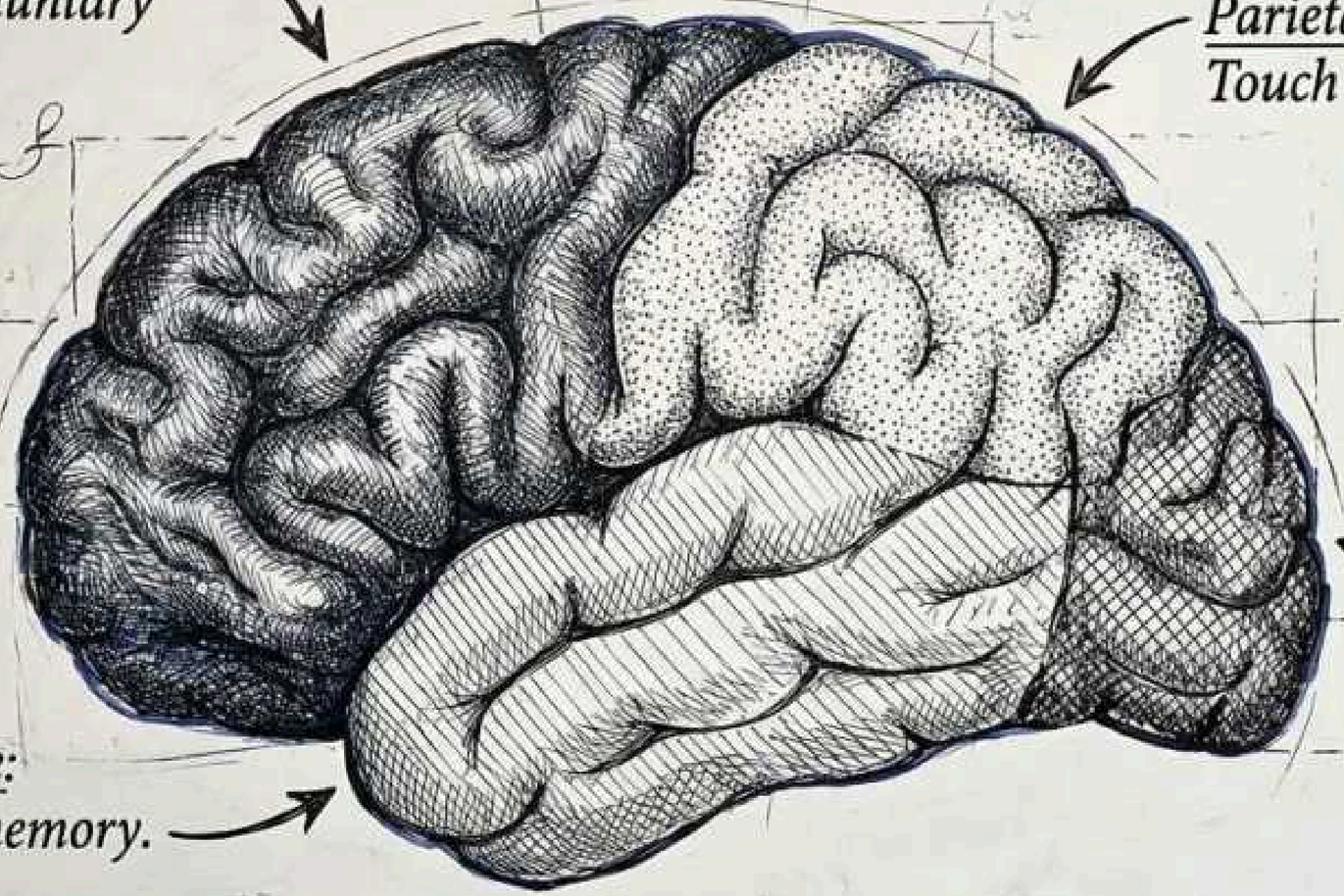
Gyri + Sulci
=
Surface Area

Corpus Callosum:
Thick fiber band joining
Left & Right Hemispheres

¶ 6.3

Frontal Lobe: Motor cortex. Planning, decision-making, personality, and voluntary movement.

Parietal Lobe: Sensory cortex. Touch and spatial awareness.



Occipital Lobe: Vision.

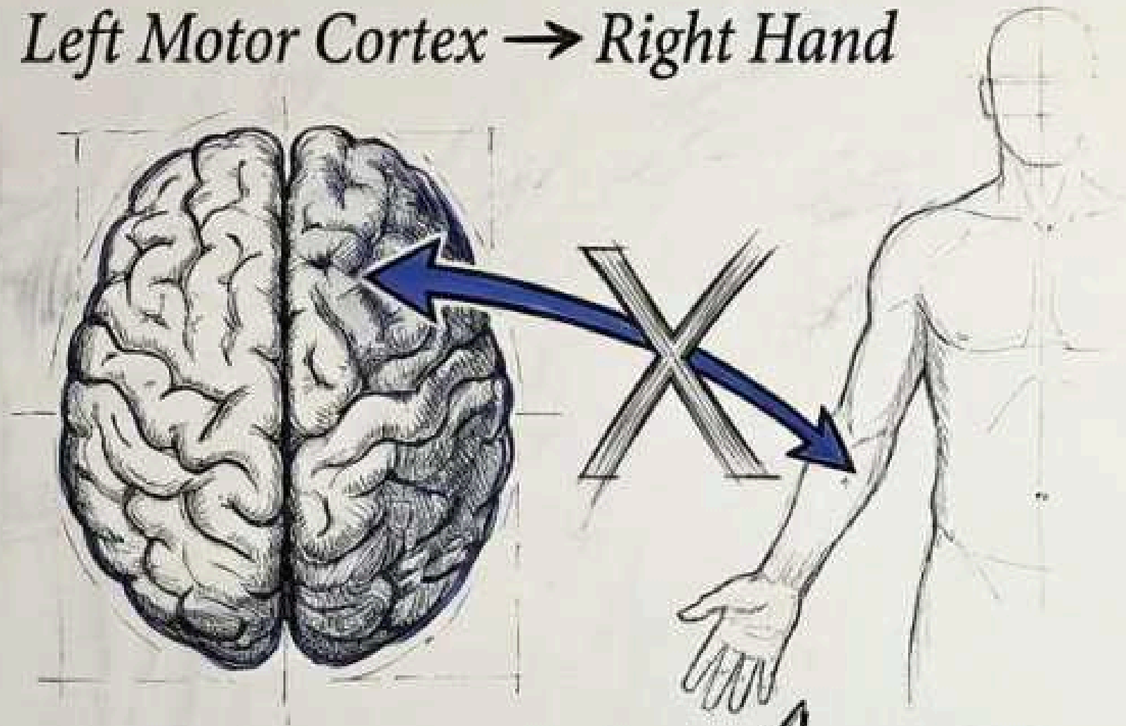
Temporal Lobe: Hearing and memory.

Note: Lobes named after the skull bones above them.

¶ 6.4

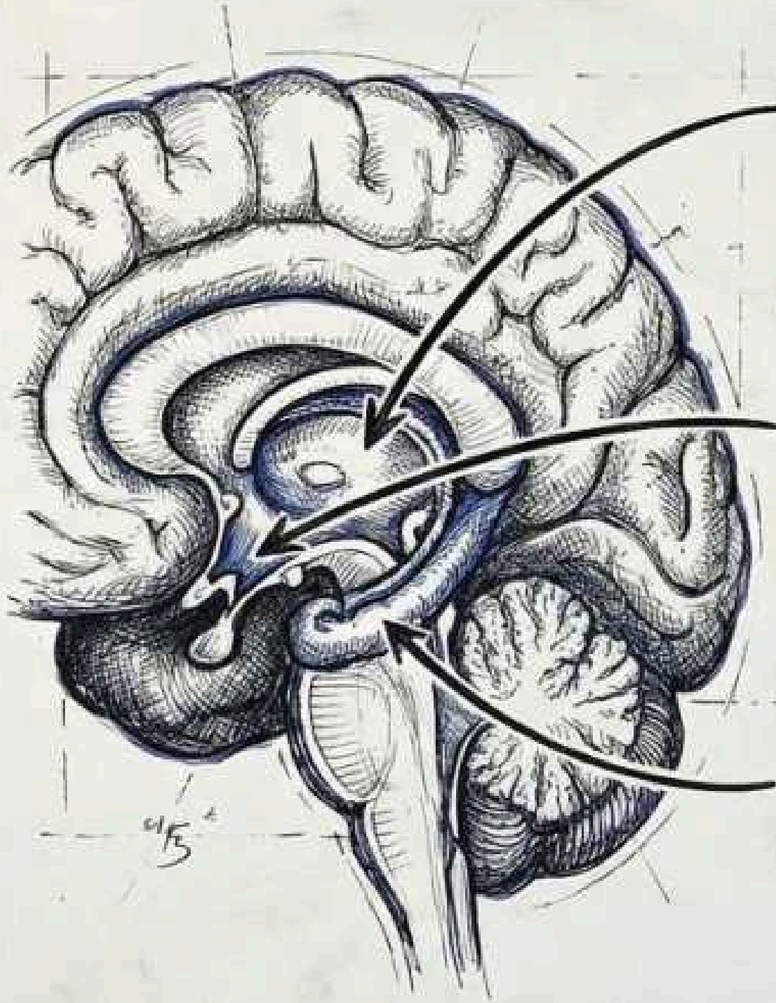
Left Side (Lateralization)

Left Motor Cortex → Right Hand



Stroke in Left Hemisphere = Paralysis on Right Side.
(Left hemisphere also dominates language).

Deep Structures)



Thalamus: Relays sensory signals.

Hypothalamus: Controls hunger, thirst, temperature, and hormones.

Hippocampus: Forms new memories.

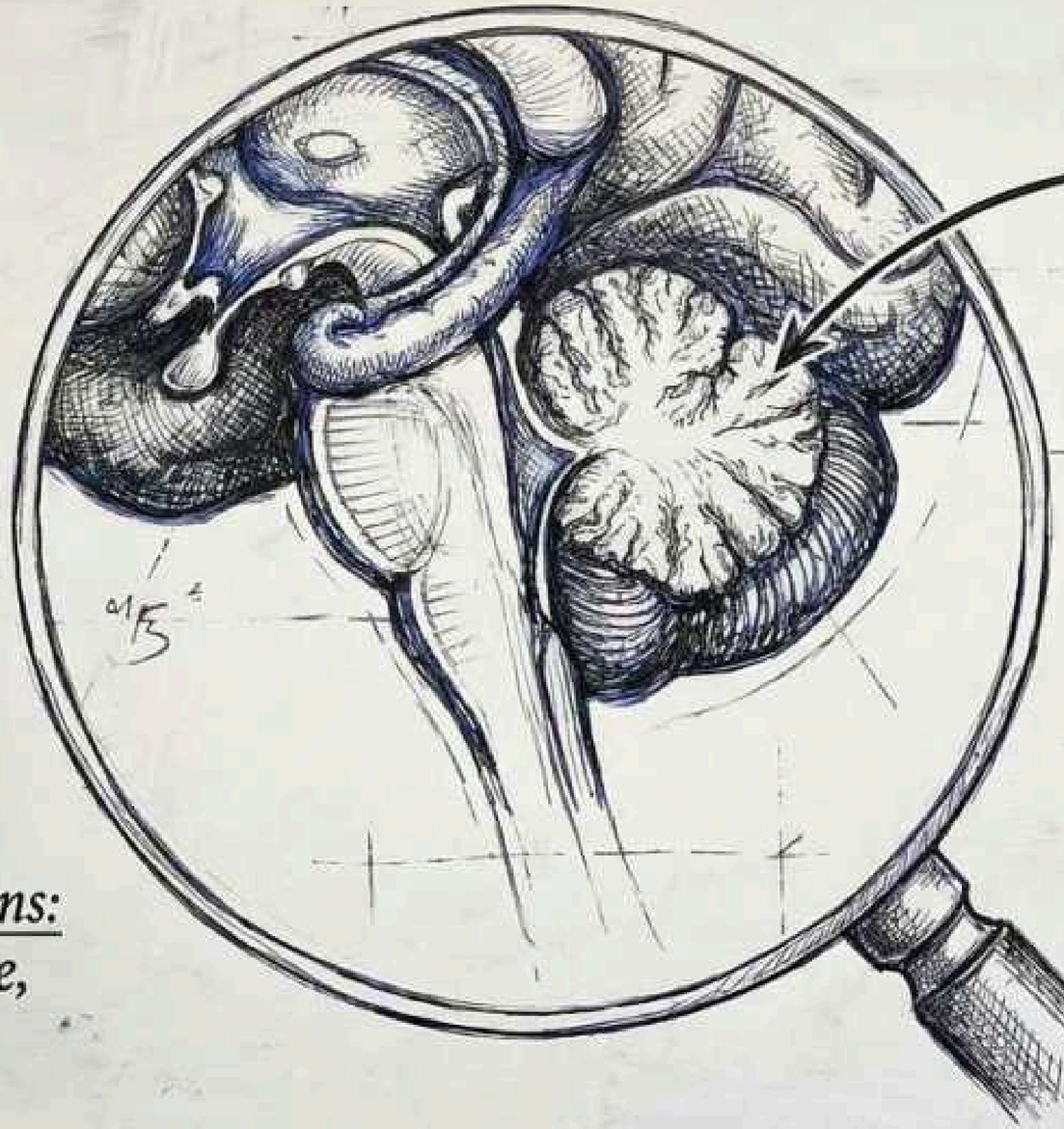
¶ 6.5

Midbrain

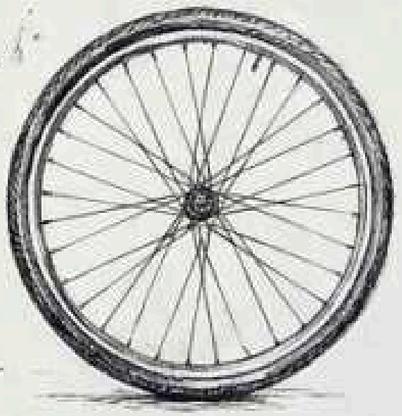
Pons

Medulla Oblongata

Controls vital functions:
Breathing, Heart Rate, Blood Pressure.

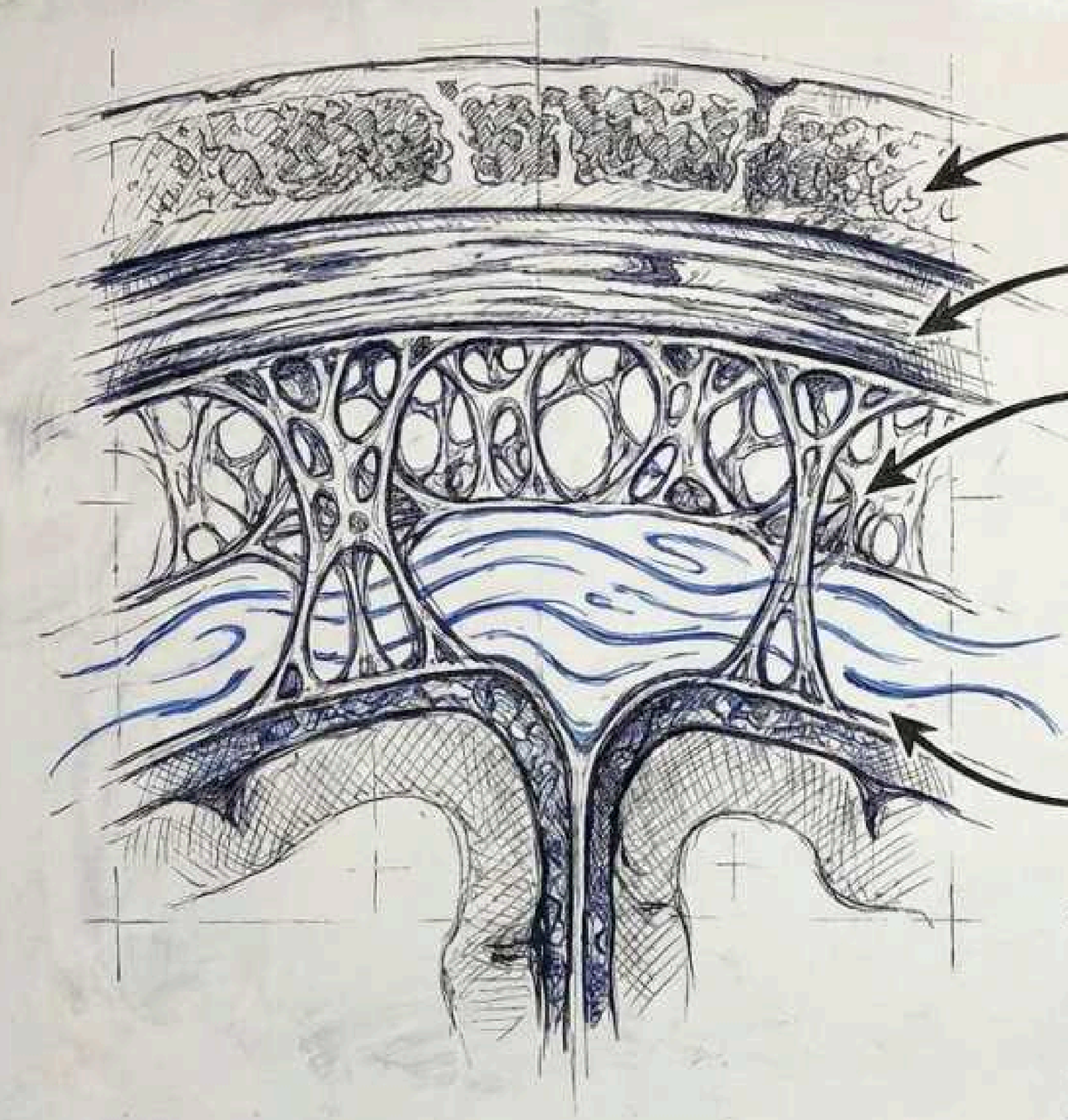


Cerebellum:
Coordinates movement, balance, and posture.



Helps learn mechanical skills.

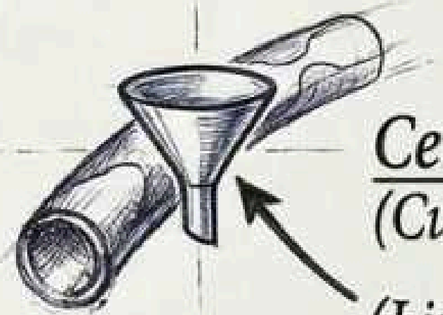
¶ 6.6



Skull

Dura mater (Tough outer membrane)

Arachnoid (Web-like middle layer)



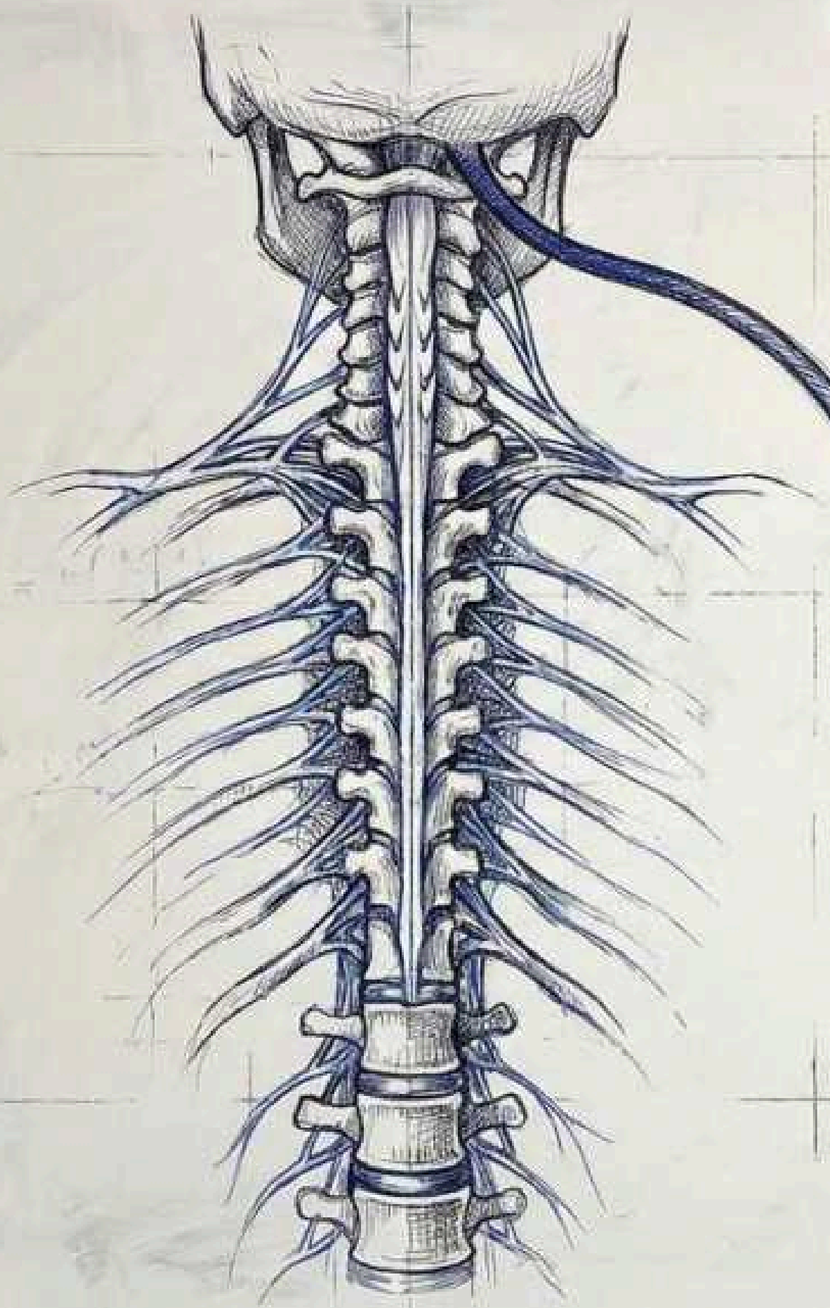
Cerebrospinal Fluid
(Cushions brain & spinal cord)

(Limits entry of substances)

Pia mater (Delicate inner membrane)

Pathology:
Meningitis = Inflammation of the meninges.

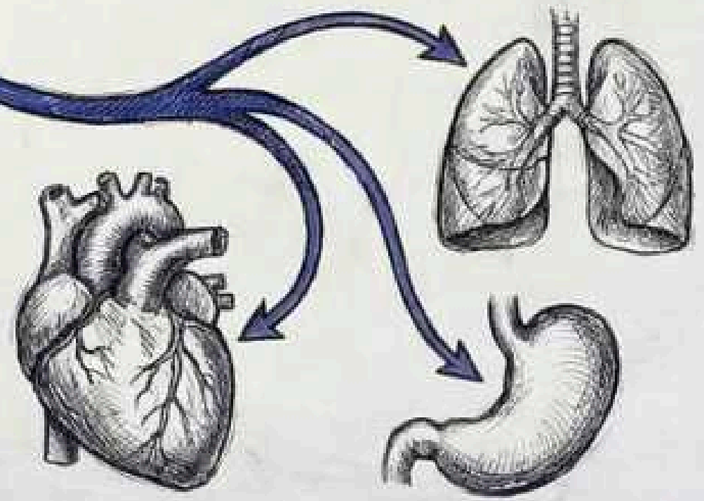
¶ 6.7



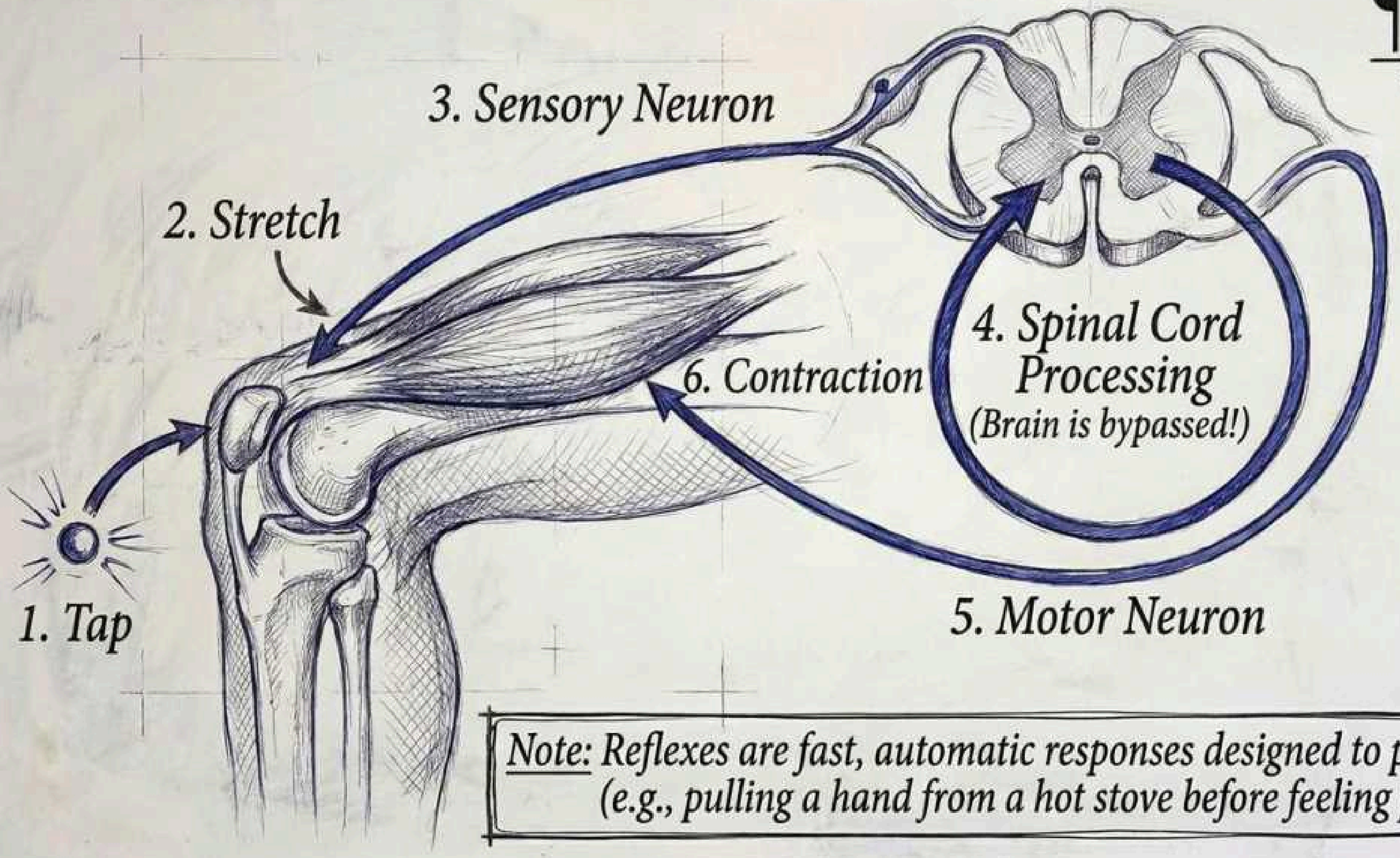
31 pairs = *Spinal nerves*
(leaving between vertebrae)

12 pairs = *Cranial nerves*
(leaving brain directly)

Vagus Nerve
(Wanders to heart, lungs, and gut).



¶ 6.8



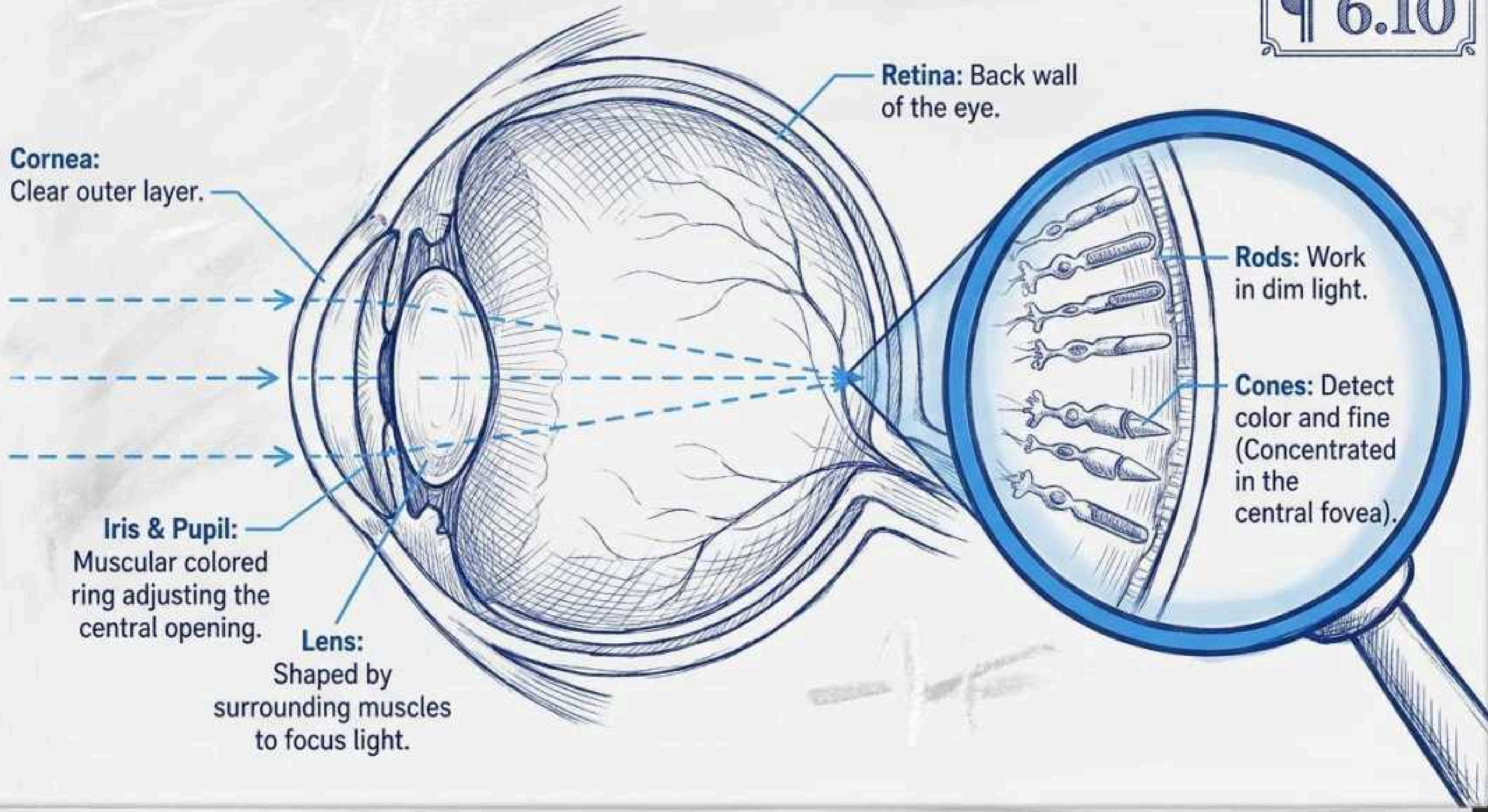
Note: Reflexes are fast, automatic responses designed to protect us (e.g., pulling a hand from a hot stove before feeling pain).

Autonomic Nervous System
(Involuntary Functions)

¶ 6.9

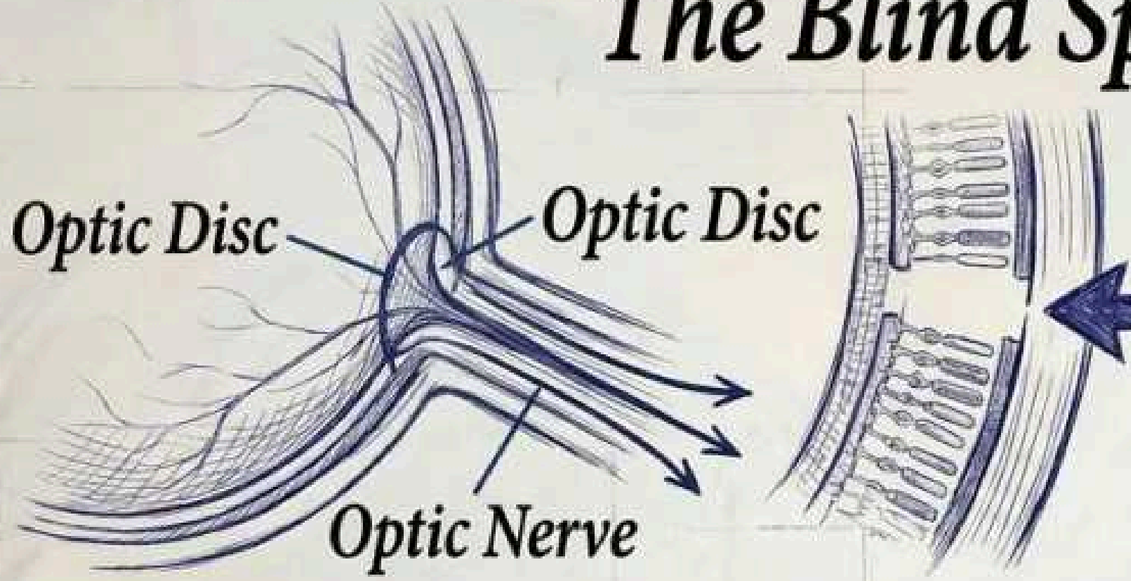
Sympathetic Branch	Parasympathetic Branch
Fight or Flight (Emergency Prep)	Rest and Digest (Mainly via Vagus nerve)
↑ Heart Rate speeds up	↓ Heart Rate slows down
↑ Pupils widen	↓ Pupils constrict
↓ Digestion slows down	↑ Digestion promoted

¶ 6.10


Cornea:
Clear outer layer.
Retina: Back wall of the eye.
Rods: Work in dim light.
Cones: Detect color and fine (Concentrated in the central fovea).
Iris & Pupil:
Muscular colored ring adjusting the central opening.
Lens:
Shaped by surrounding muscles to focus light.

The Blind Spot

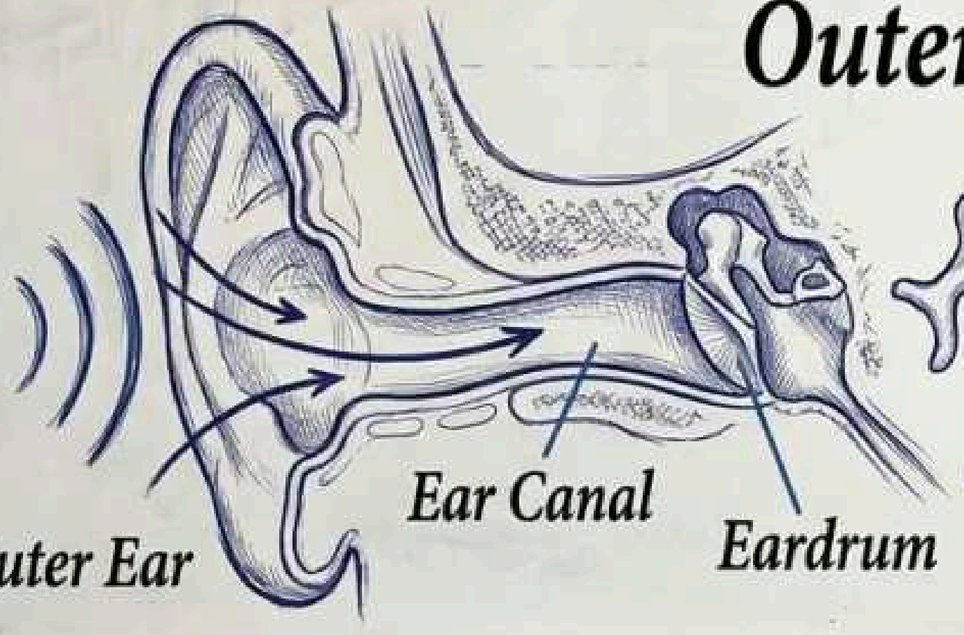
¶ 6.11



No rods or cones here
= The Blind Spot

(The brain fills in the missing visual data, sending signals to the occipital lobe).

Outer & Middle Ear



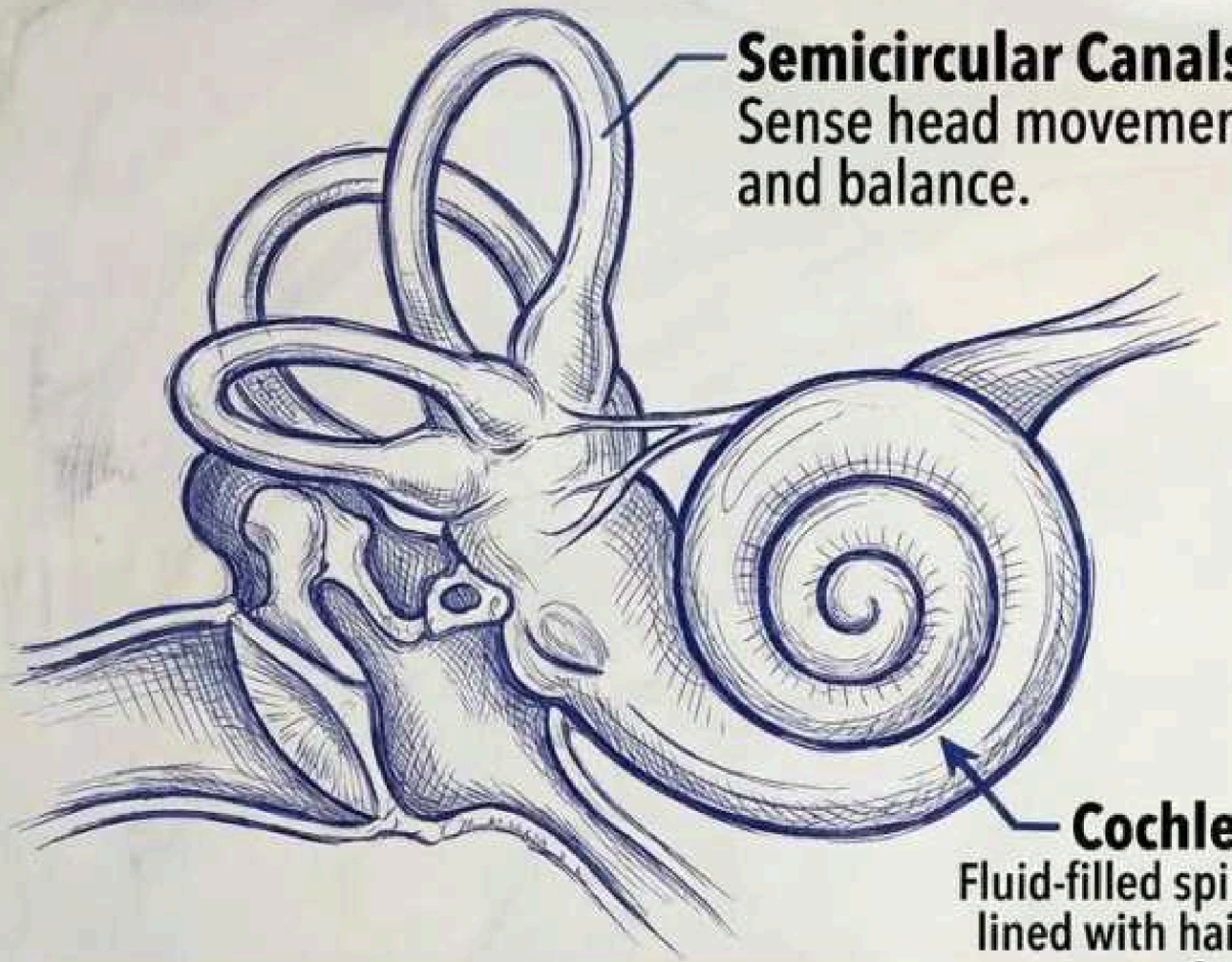


Malleus
+ Incus
+ Stapes

} = **Middle Ear Vibration Transfer**

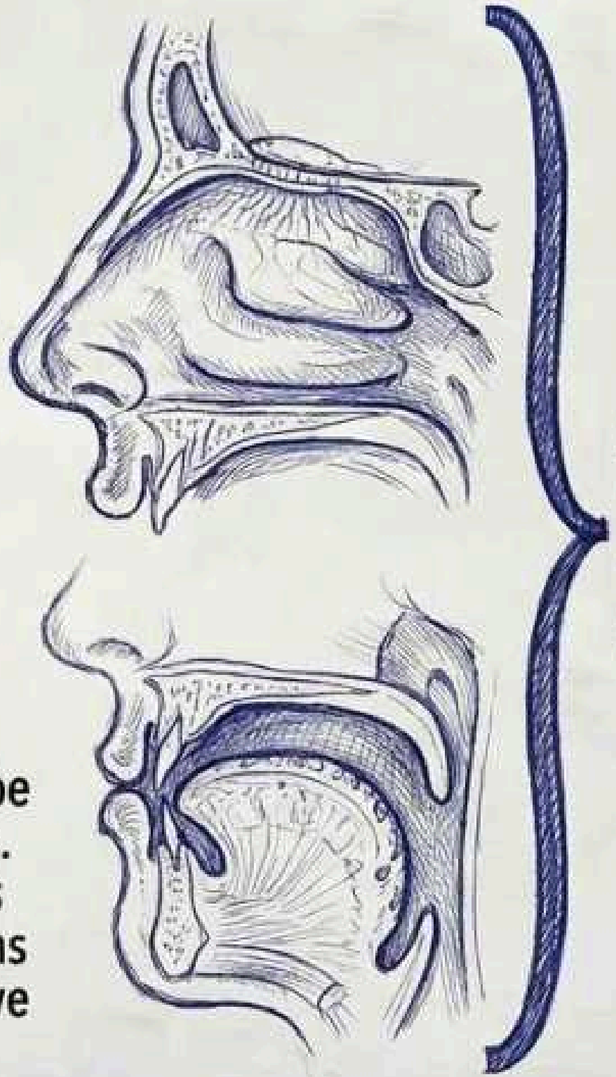
The three smallest bones in the human body.

¶ 6.12



Semicircular Canals:
Sense head movement and balance.

Cochlea:
Fluid-filled spiral tube lined with hair cells. Converts vibrations into nerve signals.



Smell & Taste:
Chemical senses detected by specialized receptors.

Warning: Loud noise can destroy hair cells permanently.

¶ 6.13

The Endocrine System:
Uses hormones (chemical messengers in the blood) for slower, longer-lasting control.

Hypothalamus
(The Director)

Pituitary Gland
(The Master Gland)

Pea-sized, located below the brain. Releases Growth Hormone.

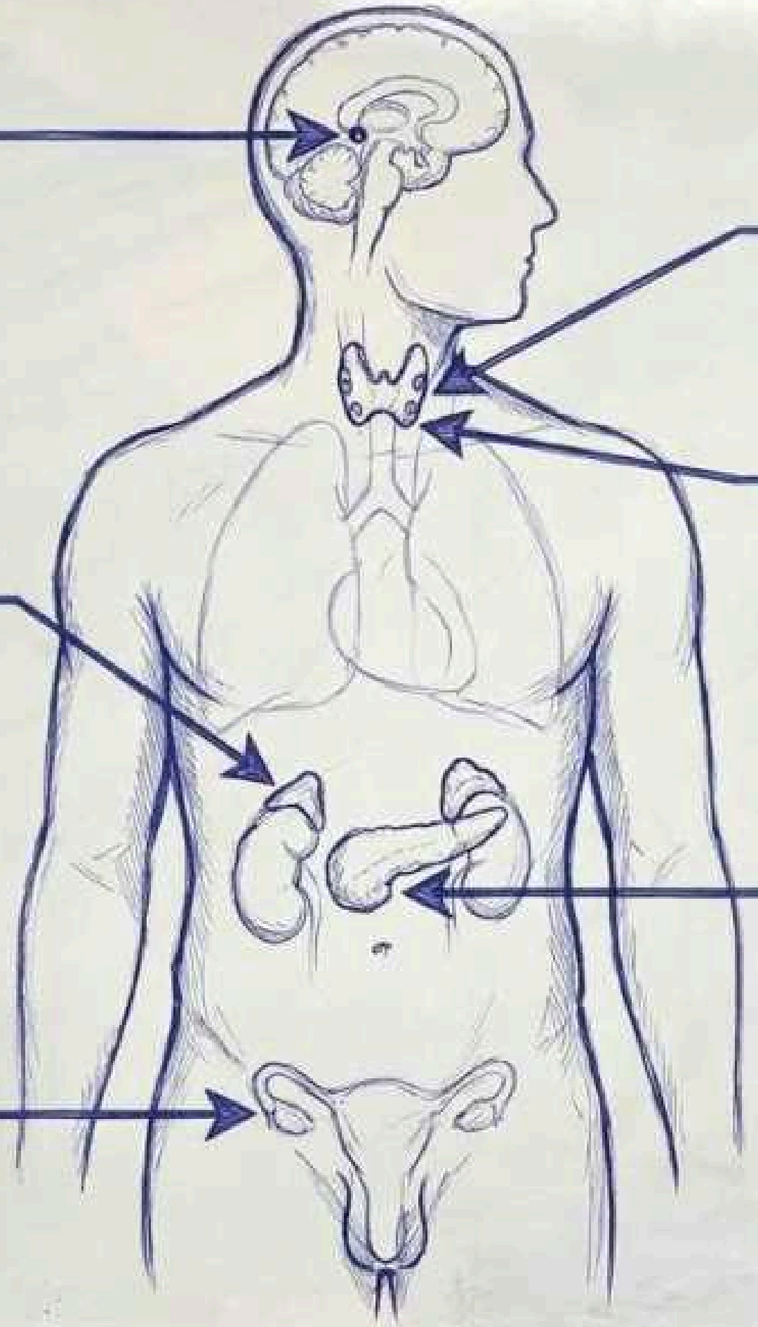
Target Glands: Controls Thyroid, Adrenals, and Reproductive Organs.

¶ 6.14

Pineal Gland:
Releases melatonin at night.

Adrenal Glands:
Releases adrenaline (emergencies) & cortisol (stress).

Ovaries / Testes:
Releases sex hormones.



Thyroid:
Controls metabolism.

Parathyroid:
Controls calcium levels.

Pancreas (Islets):
Releases insulin & glucagon to control blood sugar.

¶ 6.15

Lecture 1:
Cells, Tissues, and Organs

Lecture 2:
Skeleton and Joints

Lecture 3:
Muscles

Lecture 4:
Heart, Vessels, and Lungs

Lecture 5:
Digestion, Kidneys, and Reproduction

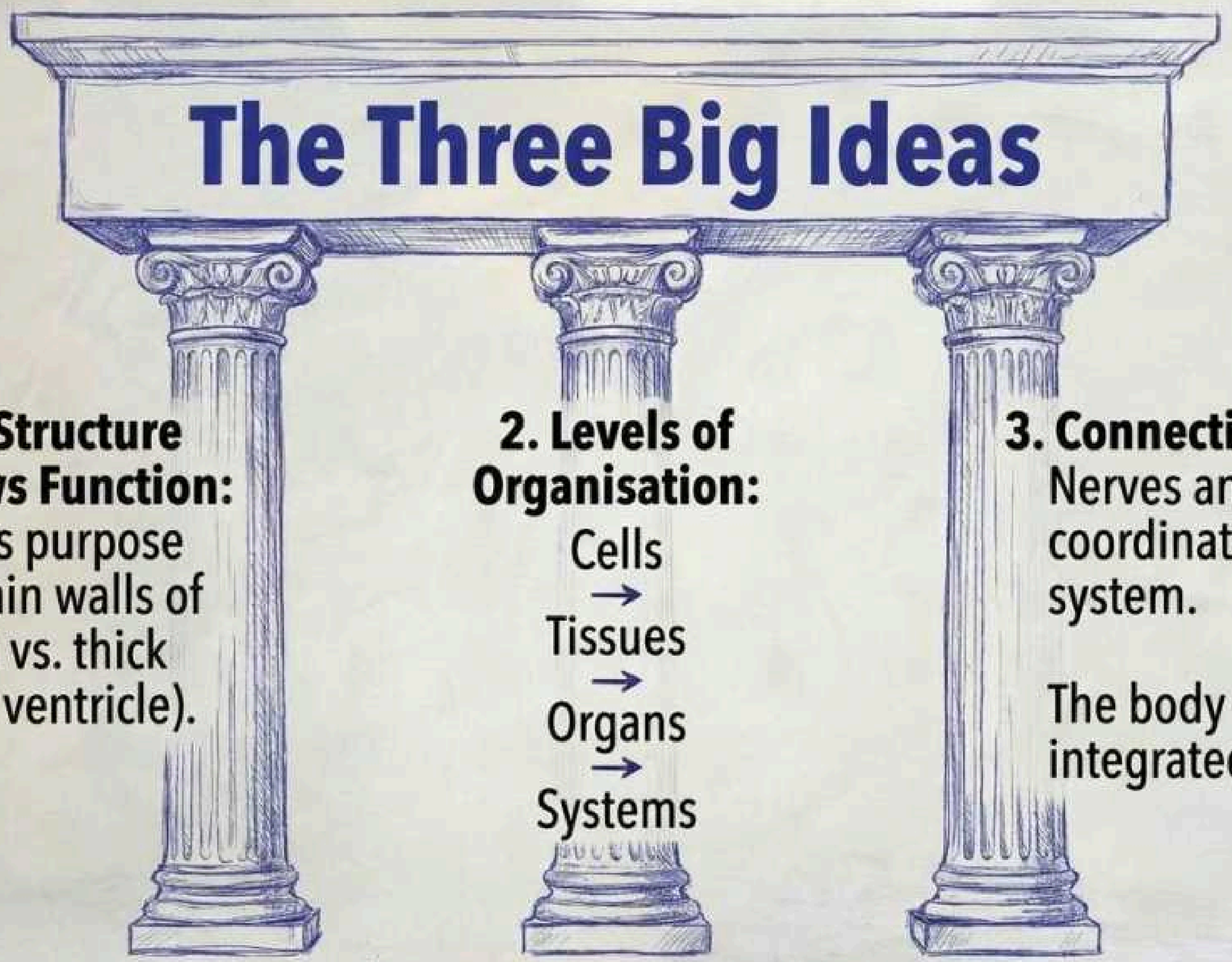
Lecture 5:
Digestion, Kidneys, and



Lecture 6:
Nervous System, Senses, and Hormones

¶ 6.16

The Three Big Ideas



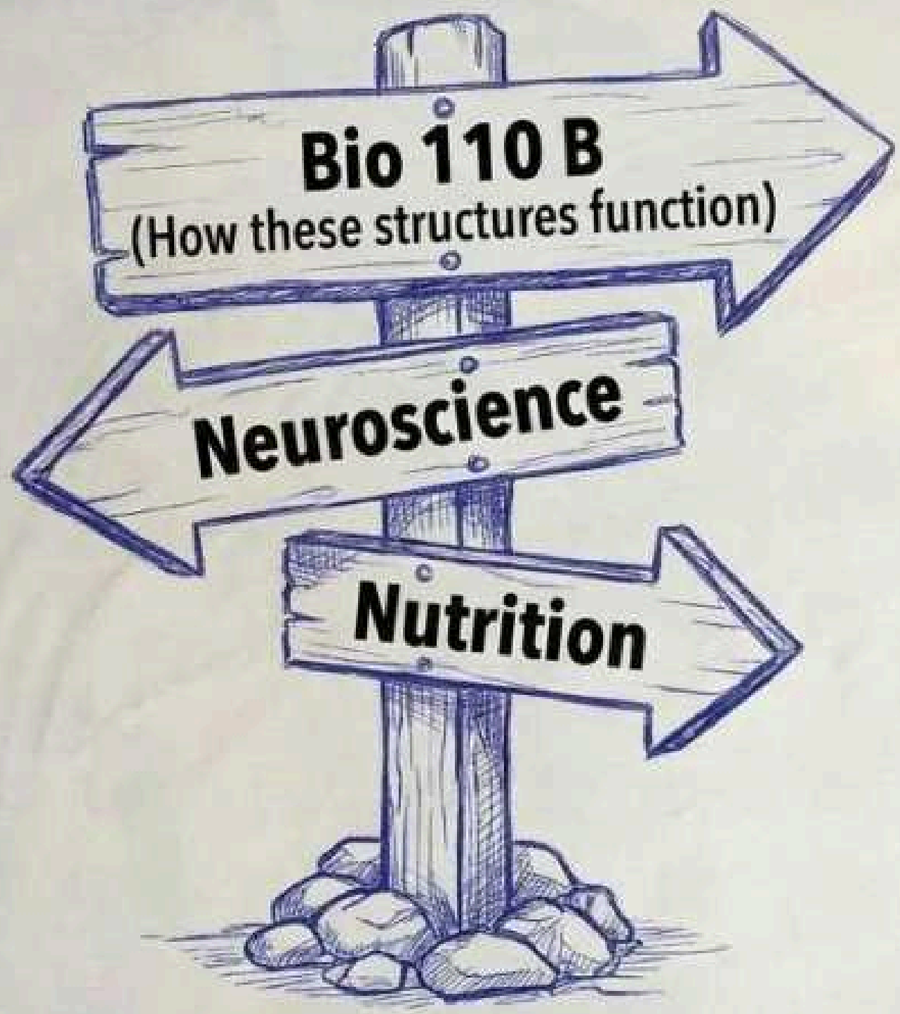
1. Structure Follows Function:
Form suits purpose (e.g., thin walls of alveoli vs. thick left ventricle).

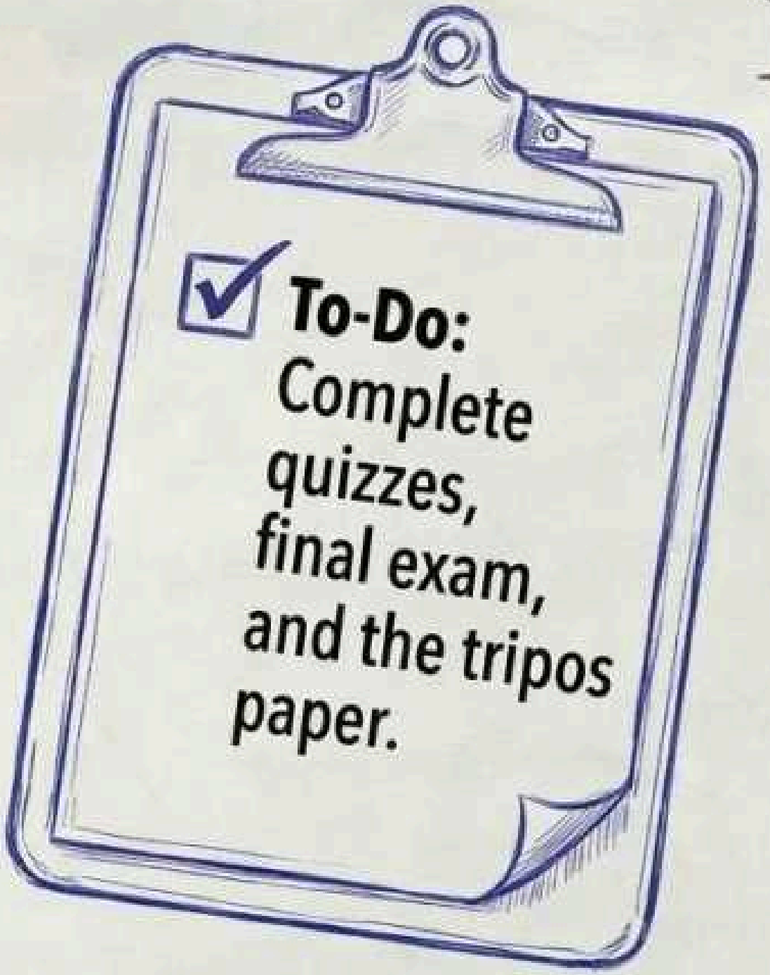
2. Levels of Organisation:
Cells → Tissues → Organs → Systems

3. Connection:
Nerves and hormones coordinate every system.

The body works as one integrated whole.

¶ 6.17





Disclaimer: This course is for education, not medical advice.



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If you took this course for free, your full compensation is
to tell us how you served others and what you learned.

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