

CO-ORDINATION AND CONTROL

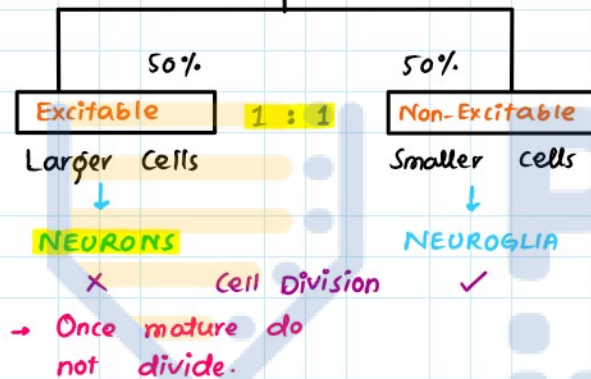
→ Response
→ Behaviour, Homeostasis

Neurology

The branch of Human Biology which deals with the study of nervous system is called Neurology.

→ Brain
→ Spinal cord
→ Nerves

NERVOUS CO-ORDINATION



CHEMICAL CO-ORDINATION

NEUROGLIAL CELLS → Nourish, Protect, Support
→ Separation / Barrier
→ Phagocytic function + Tropic

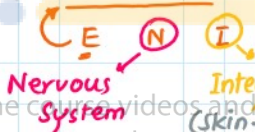
- A. **ASTROCYTE** → Blood Brain Barrier
- B. **OLIGODENDRITIC** → Myelin Sheath → CNS
- C. **Ependymal** → Lining of ventricles
- D. **MICROGLIAL** → Phagocytic Activity

SCHWANN CELLS
SATELLITE CELLS

→ PNS
→ Similar to Astrocyte
→ Sensitive to Injury

Q Nervous system developed from:

A) **ECTODERM**



B) **MESODERM**

→ Rest of System

C) **ENDODERM**

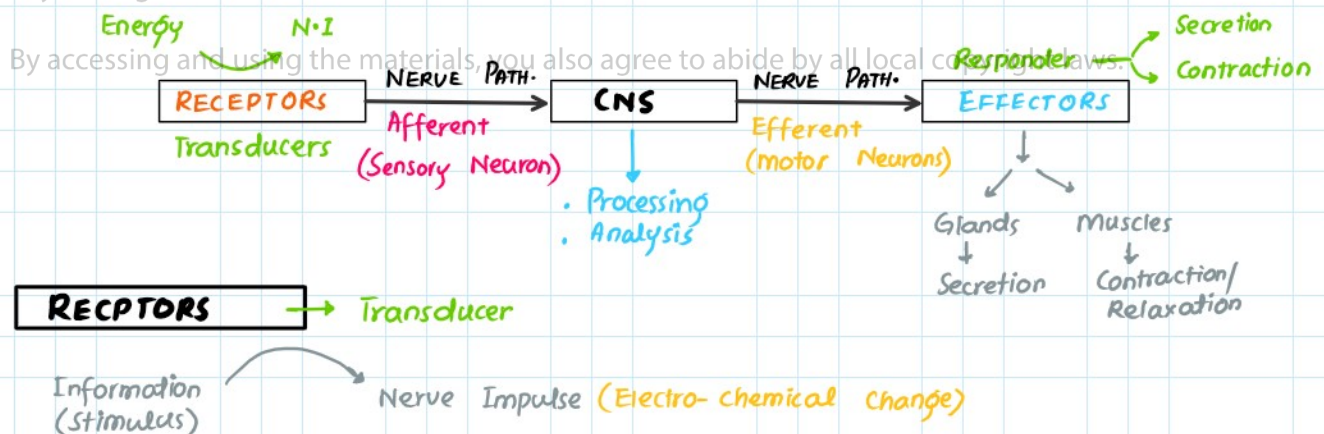


D) **NONE**

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COMPONENTS



Q Receptors can be : → All of followings can be receptors.

- A) MODIFIED NEURONS ✓
C) GROUP OF OTHER CELL TYPE ✓

- B) EPITHELIAL CELLS ✓
D) ORGAN (Eye, skin) ✓

EXTERORECEPTOR
↓
Outside body stimulus detection
e.g.
Eye → Light detection
Ear → Sound / Hearing
Nose → Smell / Olfaction

ENTERORECEPTOR
↓
Inside body stimulus detection.
e.g.
• Appendix
• Heart Attack

CLASSIFICATION OF RECEPTORS → Energy Type

THERMO-RECEPTORS → Detect change in temperature.
• Hot Receptors, Cold Receptors

CHEMO-RECEPTORS → Detect chemicals / Ions

CHEMICALS
→ O₂ (Carotid body)
→ CO₂ (Medulla Oblongata)
→ Glucose, A-Acid, F. Acid (Hypothalamus)
→ Solute → Osmotic Factors (Osmo-receptor)

(Olfaction)
• NOSE (Nasal Epithelium) → Smell
• TONGUE (Taste Buds) → Taste
(Gustation)

MECHANO-RECEPTORS → Detect mechanical change

• EAR
• MEISNER'S CORPUSCLE + MERKEL → Touch (Tactition)
• PACINIAN CORPUSCLE → Pressure (External Pressure)
• BARO-RECEPTORS (VESSELS) → Pressure (Blood / Internal)
• PROPRIO-RECEPTORS (JOINTS) → Vibrations

Free Nerve Ending
Expanded Tips
Stray Endings

Tactile Epithelial cell

→ Hearing / Equilibrium

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PHOTO-RECEPTORS → Detect light stimulus

• EYES (Rods, Cones)
Visible → UV-radiations

PAIN-RECEPTORS → Detect tissue damage

→ NOCI-CEPTORS

Formed of Un-differentiated endings of Neuron

• CUTANEOUS → Skin
• SOMATIC → Joints & Bones
• VISCERAL → Body Organs

• TACTILE ANAESTHESIA
(Loss of Touch)
• PARASTHESIA
(Numbness)

PTB

Pain Receptor > Cold > Hot receptors

27x

10x

KPK

PAIN → 200

Cold → 6

WARMTH → 1

Pressure → 15

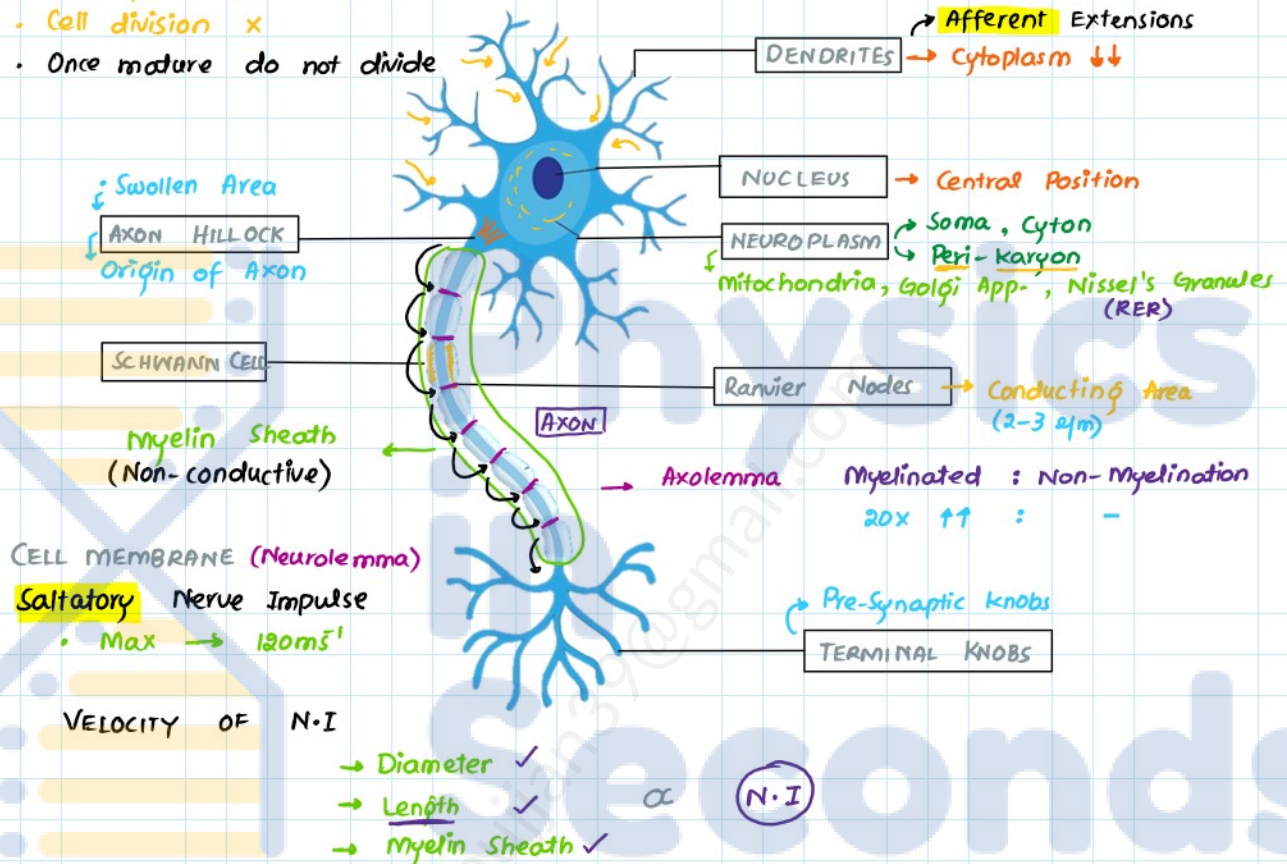
270x

Basic Structural and functional unit

- Neuroplasm lacks centrioles
- Cell division x
- Once mature do not divide

NEURONS

- Extract Energy only from Glucose.
- Special kind of animal cell
- Conducting cell → Nerve Impulse
- Excitable cell



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SENSORY

Receptor → CNS

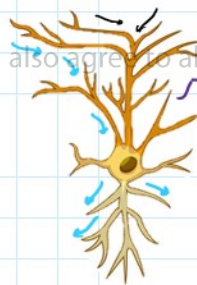
Afferent > Efferent



ASSOCIATIVE

Analysis

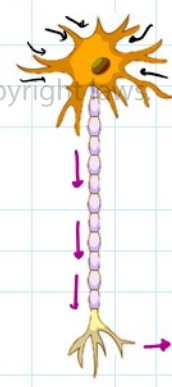
Dendrite = Axon
(Afferent) (Efferent)



MOTOR

CNS → Effectors

Efferent > Afferent
Axon Dendrite

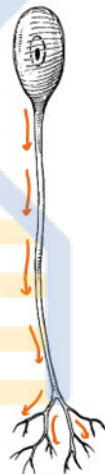


E → Exit

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FEATURE	SENSORY	RELAY	MOTOR
OTHER NAME	Afferent Neurons	Inter / Associative	Efferent Neuron
POLARITY	Uni-polar / Pseudo-	multi-polar	multi-polar
DENDRITES	X	✓	True Dendrites
DENDRONS	✓ (Only)	X	X
AXON	✓ (Short)	✓ (Variable)	✓ (Long)
MYELINATION	Always ✓	X (Rare)	Frequently (✓)
DIRECTION	Receptor → CNS	CNS	CNS → Effector
OCCURRENCE	(Present at Receptor)	CNS	PNS ✓
LOCATION (C.B)	PNS	CNS	CNS + PNS
LOCATION	Outside CNS	CNS	Partly (CNS)

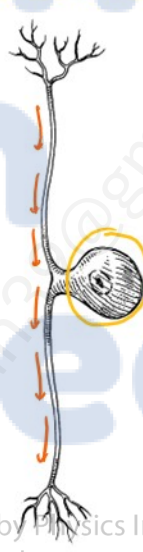
Unipolar



Bipolar



Pseudounipolar



Multipolar



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PAST PAPER QUESTIONS

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- Which axon would transmit an action potential most rapidly?
- ✗ A. 1 mm diameter neuron lacking myelin
 - ✗ B. 1 mm diameter neuron with myelin
 - ✗ C. 2 mm diameter neuron lacking myelin
 - D. 2 mm diameter neuron with myelin

S2ABMU - 2022

- Which of the following produce response?
- A. Effectors → Glands, muscles
 - B. Nerve
 - C. Stimulators
 - D. Brain

MDCAT - 2017

The detect pain and tissue damage?

- A. Baroreceptor → Pressure
- B. Chemoreceptors → Chemical
- ☒ C. Nociceptors → Pain
- D. Mechanoreceptors → Touch, Hearing

DUHS - 2022

Osmoreceptor → Solute / Solvent

_____ is considered as chief structural and functional unit of nervous system.

ETEA - 2019

- A. Cell ✗
- ☒ B. Neuron
- C. Nephron ✗
- D. Brain ✗

A long extension of nerve cell is called:

- ☒ A. Axon ✓
- B. Auxin ✗
- C. Schwann cells ✗
- D. Dendrites ✗

NUMS - 2022

Physics
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