Lecture # 1

CO-ORDINATION AND CONTROL

→ Response
→ Behaviour , Homeostasis

Neurology

The branch of Human Biology which deals with the study of nervous system → Brain, Spinal cord, Nerves is called Neurology.

NERVOUS CO-ORDINATION

50% Excitable (1 : 1) 50% Non-Excitable

Larger Cells → NEURONS
× Cell Division
→ Once mature do not divide.

Smaller Cells → NEUROGLIA
✓

CHEMICAL CO-ORDINATION

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

A. ASTROCYTE → Blood Brain Barrier
B. OLIGODENDRITIC → Myelin Sheath
C. EPENDYMAL → Lining of ventricles
D. MICROGLIAL → Phagocytic Activity

Macrophages →

Q Nervous system developed from :

A) ECTODERM
E N I
Nervous System
Integument (Skin + Appendages)

B) MESODERM
↓
Rest of System

C) ENDODERM
E G G
G.I.T
Glands → Liver, Pancreas
Digestive System

D) NONE

COMPONENTS

Energy → N.I → RECEPTORS (Transducers)
NERVE PATH. Afferent (Sensory Neuron) → CNS
. Processing
. Analysis
NERVE PATH. Efferent (motor Neurons) → EFFECTORS
Responses → Secretion, Contraction

EFFECTORS
Glands → Secretion
Muscles → Contraction / Relaxation

RECPTORS → Transducer

Information (Stimulus) → Nerve Impulse (Electro- chemical change)

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

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A) MODIFIED NEURONS ✓
B) EPITHELIAL CELLS ✓
C) GROUP OF OTHER CELL TYPE ✓
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-RECPTORS → Detect change in temperature.
- Hot Receptors, Cold Receptors

CHEMO-RECEPTORS → Detect chemicals / Ions
CHEMICALS:
- O_2 (Carotid body)
- CO_2 (Medull 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 → Hearing / Equilibrium
- MEISENER'S CORPUSCLE + MERKEL → Touch (Tactition)
- PACINIAN CORPUSCLE → Pressure (External Pressure)
- BARRO-RECEPTORS (VESSELS) → Pressure (Blood / Internal)
- PROPRIO-RECEPTORS (JOINTS) → Vibrations

PHOTO-RECEPTORS → Detect light stimulus → Electro-magnetic waves
- EYES (Rods, Cons) — Visible, UV-radiations

PAIN-RECEPTORS → Detect tissue damage
→ Nociceptors
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, 270x

KPK
PAIN → 200 Cold → 6
WARMTH → 1 Pressure → 15

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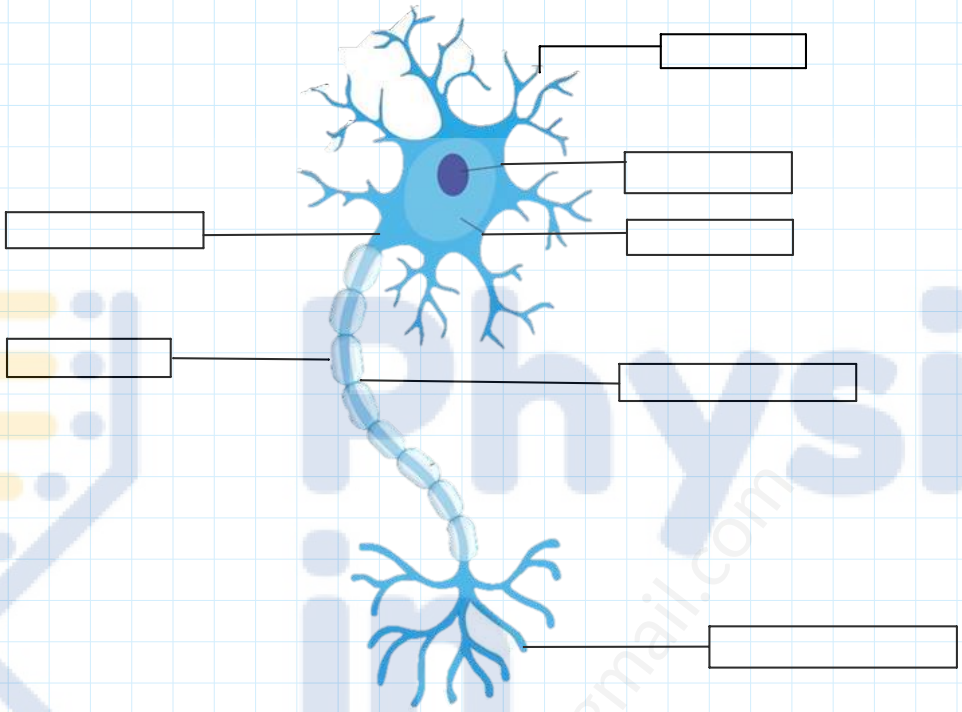
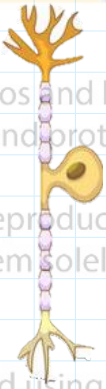
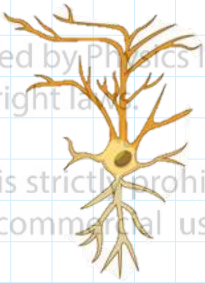
NEURONS



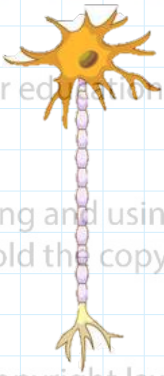
SENSORY



ASSOCIATIVE



MOTOR



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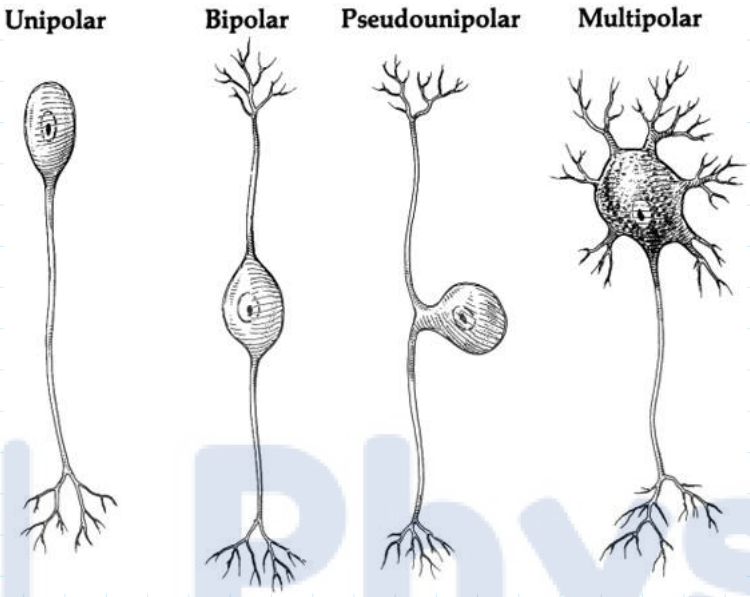

PAST PAPER QUESTIONS

Which axon would transmit an action potential most rapidly? SZABMU – 2022

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

Which of the following produce response? MDCAT – 2017

A. Effectors
B. Nerve
C. Stimulators
D. Brain

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The detect pain and tissue damage? DUHS – 2022

A. Baroreceptor
B. Chemoreceptors
C. Nociceptors
D. Mechanoreceptors

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_____ 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: NUMS – 2022

A. Axon
B. Auxin
C. Schwann cells

D. Dendrites

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