Today's mood: Craving coffee / Main character energy / 11/10 / BRB overthinking / Logging off

Nervous System 10.1

LO(a)(i)

① Regulates bodily functions and activities, allowing organisms to detect changes in their surrounding and respond to it.

② Enables the diff parts of the body to coordinate with one another.

(ROLE)

stimulus (change) → response (react to stimulus)

ability to detect & respond to changes in environ. is known as sensitivity.

(Human n. syst.) comprises of:

LO(a)(i): comprises brain, spinal cord, nerves

- brain; spinal cord (encased in the vertebral column) → Central Nervous System (CNS)
- Cranial nerves (nerves that branch from brain (neck up)); Spinal nerves (nerves that branch from spinal cord (neck down)) → Peripheral Nervous System (PNS)
  - connect spinal cord to various parts of body.
  - Spinal nerves: contains both s.n and m.n "mixed nerve".

Involuntary Action (not controlled consciously)

↓ includes

Reflex Action — E.g. sweating

Reflex Arc: shortest pathway n.i. travel from receptor to effector in a reflex action.

stimulus ⤳ Receptor —(s.n)→ CNS (r.n) —(m.n)→ Effector ⤳ Response

★ A reflex action is an immediate response to a specific stimulus without concious control.

- Spinal Reflex — controlled by spinal cord
  - → withdrawal reflex
  - → knee-jerk reflex
- Cranial Reflex — controlled by brain but not concious will
  - → pupil reflex
  - → salivation
  - → blinking (also can!)

Voluntary Action (w concious control)

Brain —(r.n)→ CNS —(m.n)→ Effector ⤳ Response

Sensation

External Stimulus ⤳ Receptor (e.g. touch receptors/pain receptors in skin) —(s.n.)→ CNS (brain) (r.n.) → "feels"

Neurones 10.1 (cell)

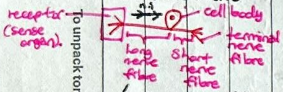
Nerve tissue —consists of→ Neurones

Synapse

- → junction btwn 2 neurones, or btwn a motor neurone & effector (r.n → m.n.; s.n → r.n)
- → n.i. are transmitted across a synapse by chemicals released by the neurone called neurotransmitters.

Sensory neurone

→ transmits nerve impulses from receptors to CNS — specify!



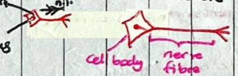
strand of cytoplasm extending from ⊙/△

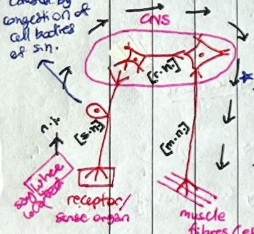
Relay n.

→ transmits n.i. from s.n. in CNS to m.n.

Motor n.

→ transmits n.i. from r.n in CNS to effectors





bulge: caused by congestion of cell bodies of s.n.

s.n. vs r.n. & m.n

- s.n.: → cell body not at end of neurone; → cell body lacks
- r.n. & m.n: → cell body at end of neurone

Direction of nerve impulse transmission

stimulus ⤳ Receptors —(s.n.)→ CNS (r.n.) (brain / spinal cord) —(m.n.)→ Effector ⤳ Response

- Receptors: - detect changes; - produce n.i. to inform CNS
- Effector: - respond to processed stimuli
  - muscles — contract — (response) action
  - glands — exocrine → not hormones; endocrine → hormones
- Response: intangible, not structures.

Reflex Action

E.g. Hand touching hot object.

- stimulus → Heat from hot object
- ① type of receptor involved ② location → Stimulates thermoreceptors ① in your skin ②
  - thermoreceptors — skin; — brain (hypothalamus)
  - osmoreceptors in hypothalamus
  - * islets of Langerhans in pancreas
  - * photoreceptors in retina
- Nerve impulses are produced and transmitted along sensory neurone to
- CNS: brain or spinal cord → Spinal cord.
- In spinal cord, n.i. are transmitted across a synapse to the relay neurone, and then across another synapse to motor neurone.
- Upon receiving nerve impulses from r.n., motor neurone transmits the n.i. to the
- effector → bicep muscle.
- response → Bicep muscle contracts resulting in withdrawal of hand from hot object.

* The brain only receives the nerve impulses from the relay neurone after the effector has received them.

∴ You are made aware but brain is not involved in the withdrawal of the hand from hot object.

To unpack tomorrow:

TYPO

Date: / /

The Eye 10.2

Parts & Functions of Eye — see notes

#1 PUPIL REFLEX

by constricting or dilating pupil (Light)

response to changes in light intensity

↳ protects eye from excessive light exposure that can cause damage, retina

↳ helps us to see in dim light?

Changes in light intensity (Stimulus)

(Receptor)

More light rays enter eye via pupil

Photoreceptors on retina stimulated

[s.n.] in optic nerve

Brain (CCNS) [r.n.]

[m.n.]

Iris muscles (effector)

→ cranial reflex action.

Immediate response to specific stimulus w/o conscious control.

radial muscles

circular muscles of iris

antagonistic muscles work together to control the size of pupil

Bright Light

→ circular muscles of iris contract

→ radial muscles relax

↓

pupil constricts

↓

reduced amt of light entering eye

↓

protects eye from excessive light exposure

which may damage retina

Dim Light

→ radial muscles contract

→ circular muscles relax

↓

pupil dilates

↓

increased amt of light entering eye

↓

allows us to see in dim light.

#2 Focusing (distance)

Accomodation reflex?

adjust curvature and thickness of lens

↳ clear images of objects are formed on retina at different dist.

↓

this focusing light rays on one spot on the retina → sharp image formed

How we see 101 — see notes :P

Nearby Objects

→ Ciliary muscles contract

→ Suspensory ligaments become slack

↳ relax pull on lens

↓

Lens becomes thicker & more convex curved.

Distant Objects (>7m)

→ Ciliary muscles relax

→ Suspensory ligaments become taut

↳ pull on edge of lens

↓

Lens becomes thinner & less convex

→ light rays come in parallel

↳ no need bend so much (less curved)

refracted to fall on fovea

one spot on retina

→ Light rays are sharply focused on retina

↳ stimulate photoreceptors on retina

↓

generate nerve impulse

↓

transmitted to brain via s.n. in optic nerve

↓

Brain interprets impulses

↓

& sees object clearly from that distance.

TYPO

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Craving coffee

Main character energy

11/10

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