

INKBIOLOGY FLASHCARDS

Nervous coordination, receptors, muscles and behaviour

Unit B14 · 24 cards · fronts and backs

Print double-sided, flipping on the long edge, and each answer lands behind its question. Cut along the card borders.

Definitions in mark-scheme wording, and the misconceptions that lose marks. These cards and each lesson's whole-lesson check run on the website with spaced-repetition scheduling, at inkphysics.co.uk/biology/flashcards.

DEFINITION

Define: Stimulus.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

Define: Receptor.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

Define: Effector.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

Define: Reflex.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

Define: Reflex arc.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

Define: Transducer.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

Define: Generator potential.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

Define: Threshold.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

A cell or structure that detects one kind of stimulus and converts it into a change in membrane potential.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

A detectable change in the internal or external environment.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

A rapid, automatic response to a stimulus, involving a fixed pathway of neurones and no conscious decision.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

A muscle or gland that brings about a response.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

Something that converts energy from one form into another; a receptor converts the energy of a stimulus into a change in membrane potential.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

The pathway of neurones taken by a reflex. In the examined withdrawal reflex: receptor, sensory neurone, relay neurone, motor neurone, effector.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

The membrane potential, around -55 mV, that must be reached before an action potential is triggered.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

DEFINITION

The graded depolarisation produced in a receptor by a stimulus, whose size depends on the strength of that stimulus.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN CARRY

SPOT THE ERROR

Say what is wrong with this claim:

Your fingertip detects heat and sends the heat up your arm; your eye detects colour and sends colour along the optic nerve.

RECEPTORS: TURNING A STIMULUS INTO SOMETHING A NEURONE CAN UNDERSTAND. THE ACTION POTENTIAL: THE SAME SIZE, HOWEVER HARD YOU PUSH

DEFINITION

Define: Resting potential.

DEFINITION

Define: Polarised.

THE ACTION POTENTIAL: THE SAME SIZE, HOWEVER HARD YOU PUSH

DEFINITION

Define: Voltage-gated channel.

DEFINITION

Define: Synapse.

SPOT THE ERROR

Say what is wrong with this claim:

The impulse travels along the neurone like electricity down a wire.

THE ACTION POTENTIAL: THE SAME SIZE, HOWEVER HARD YOU PUSH

DEFINITION

Define: Cholinergic synapse.

DEFINITION

Define: Neurotransmitter.

THE SYNAPSE: TRANSMISSION, AND WHY IT RUNS ONE WAY

THE SYNAPSE: TRANSMISSION, AND WHY IT RUNS ONE WAY

DEFINITION

The potential difference across the membrane of a neurone that is not conducting an impulse, about -70 mV inside relative to outside.

THE ACTION POTENTIAL: THE SAME SIZE, HOWEVER HARD YOU PUSH

SPOT THE ERROR

Nothing about the stimulus travels anywhere. A receptor is a transducer: it converts the energy of one stimulus into a change in membrane potential. Pressure, light and sound are then told apart by which neurone the impulses arrive along and how often.

DEFINITION

A channel protein that opens or closes in response to a change in the potential difference across the membrane.

THE ACTION POTENTIAL: THE SAME SIZE, HOWEVER HARD YOU PUSH

DEFINITION

Describes a membrane with a potential difference across it; at rest the axon membrane is polarised with the inside negative.

DEFINITION

The junction between the end of one neurone and another neurone or an effector cell, across which chemical transmission occurs.

THE SYNAPSE: TRANSMISSION, AND WHY IT RUNS ONE WAY

SPOT THE ERROR

Nothing flows along the axon. What moves is a sequence of events across the membrane, ions crossing at one point and depolarising the patch next door. The fastest human axon manages about 100 m s^{-1} , roughly a millionth of the speed of electricity in copper.

THE ACTION POTENTIAL: THE SAME SIZE, HOWEVER HARD YOU PUSH

DEFINITION

A synapse that uses acetylcholine as its neurotransmitter.

THE SYNAPSE: TRANSMISSION, AND WHY IT RUNS ONE WAY

DEFINITION

A chemical released from a presynaptic neurone that diffuses across the cleft and binds to receptors on the postsynaptic membrane.

THE SYNAPSE: TRANSMISSION, AND WHY IT RUNS ONE WAY

DEFINITION

Define: Excitatory postsynaptic potential.

THE SYNAPSE: TRANSMISSION, AND WHY IT RUNS ONE WAY

SPOT THE ERROR

Say what is wrong with this claim:

The impulse crosses the synapse.

THE SYNAPSE: TRANSMISSION, AND WHY IT RUNS ONE WAY

DEFINITION

Define: Sarcomere.

SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING

DEFINITION

Define: A band.

SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING

DEFINITION

Define: I band.

SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING

DEFINITION

Define: H zone.

SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING

DEFINITION

Define: Sarcoplasmic reticulum.

SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING

SPOT THE ERROR

Say what is wrong with this claim:

Muscles shorten because the filaments in them shorten.

SPOT THE ERROR

The impulse arrives at the presynaptic membrane and stops there. A chemical is released, diffuses across a gap about 20 nm wide and binds on the far side, where, if enough arrives, a new action potential begins in a different cell. The message continues; the impulse does not.

THE SYNAPSE: TRANSMISSION, AND WHY IT RUNS ONE WAY

DEFINITION

A depolarisation of the postsynaptic membrane that makes an action potential more likely.

THE SYNAPSE: TRANSMISSION, AND WHY IT RUNS ONE WAY

DEFINITION

The dark band, the full length of the thick filaments, including any overlap with thin filaments.

SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING

DEFINITION

The functional unit of a myofibril, running from one Z line to the next.

SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING

DEFINITION

The lighter region at the centre of the A band, containing thick filaments only.

SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING

DEFINITION

The light band, containing thin filaments only, spanning a Z line.

SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING

SPOT THE ERROR

Nothing shortens; the filaments slide. Under an electron microscope the dark A band is the same width in a contracted muscle as in a relaxed one, and the thick filaments that make it are the same length. What changes is how far the thin filaments have been pulled between them.

SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING

DEFINITION

The membrane system inside a muscle fibre that stores and releases calcium ions.

SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING SLIDING FILAMENTS: SHORTENING A MUSCLE WITHOUT SHORTENING