Physiology

Neuron (action Potential in neuron)

main function of neuron : conductance action potential

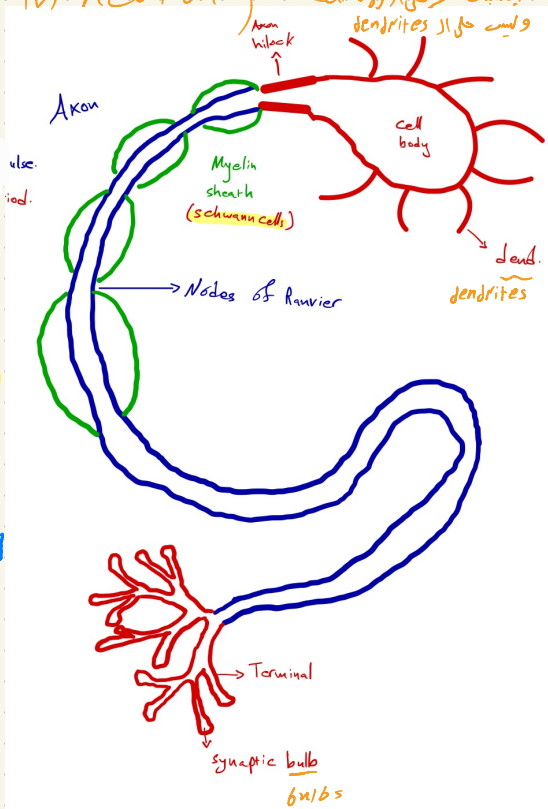
→ Action Potential generation is on axon holick

→ most synapse are with cell body not dendrities

→ main function of neuron : conduction of impulse

→ unidirectional because of refractory period

ما يقدر يرجع فيضل على اتجاه واحد لانو اذا بدو يرجع يلاقي في refractory period فما رح يتحفز كلفاضي



supportive cells functions :

1- Keep the media clean

2- destroy neurotransmeiters

بكسر اذا neurotrans عشان ما نقل متحفزين طول الوقت

3- Keep low $[K^+]$

depolarize بكون بسبل action potential لانو بخرب

بخرب وبسبل depolarize

4- Release neurotrophic factors

عشان العصبون يضل حابيش

5- Nutrients

تغذية العصبون

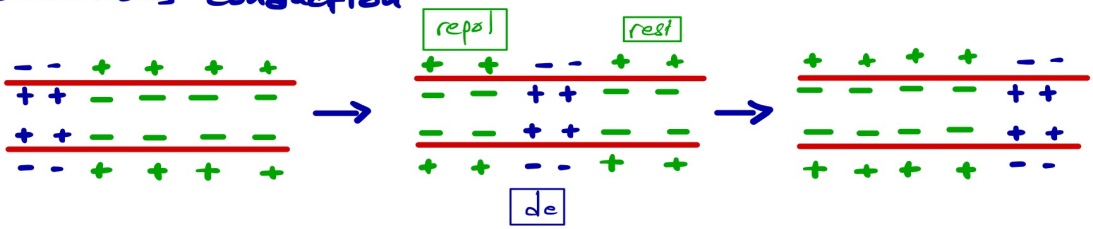
49.One of the following with regard to the refractory period is TRUE:

A. Includes the period of time when most Na+ channels are closed and capable of opening.
B. Serves to ensure unidirectional propagation of an action potential along nerve fiber.
C. It appears by activation of adenylate cyclase.
D. During the relative refractory period the membrane has the highest conductance for Na+
E. Includes the period of depolarization before reaching threshold.

- myelinated → saltatory conduction
  faster — ينط من عقدة لعقدة فسرعتها يكون
- unmyelinated → continous conduction
  بستمر رقم فقدان الشحنة

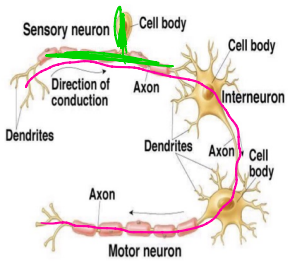
* speed
1. precence of mylin sheeth — كريع
2. dimeter of axons
3. length of axons

Continous conduction

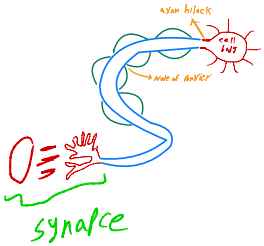


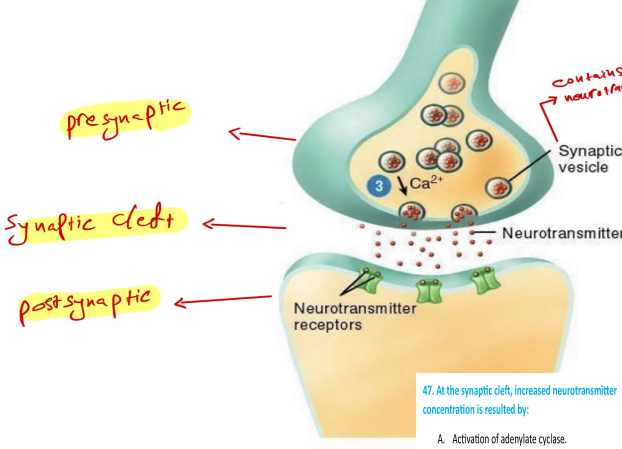
Sensory neurons — ينقل نبضات حسية

1. T shape
2. from terminal to terminal.



Synapse





47. At the synaptic cleft, increased neurotransmitter concentration is resulted by:

A. Activation of adenylate cyclase.
B. Activation of chemical gated Ca++ channels.
C. Activation of phospholipase C.
D. Increased Ca++ concentration in terminals.
E. Inhibition of adenylate cyclase.

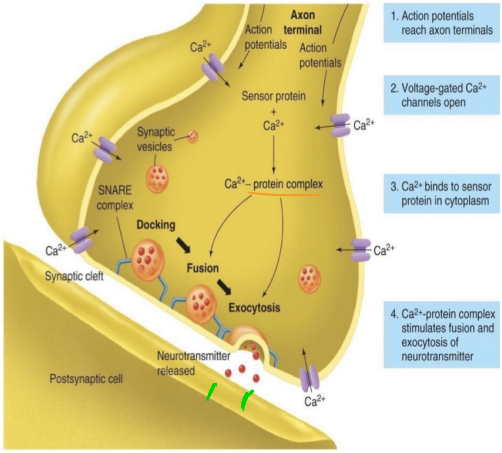
Termenal

1. Ca^{2+} channels ↑

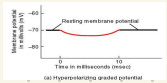
2- Ca^{2+} – sensor Protein

3- Vesicle fuse with membrane

4- Na^{+}, K^{+} channels on postsynaptic membrane



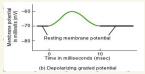
5- action Potential → IPSP



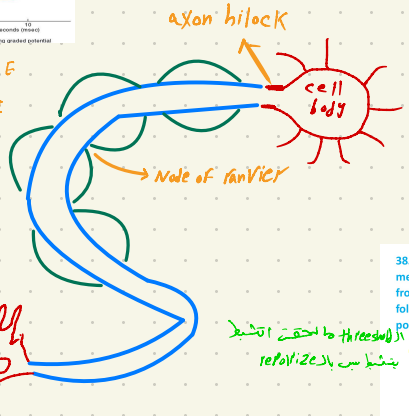
inhibitory

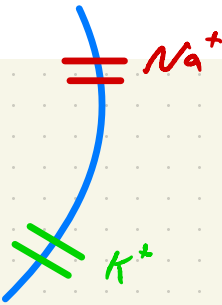
E
I

EPSP



Existory Post Synaptic Potential





29.Events during synaptic transmission are:

1) Activation of voltage gated Ca++ channels at terminals.
2) Generation of EPSPS (Excitatory post synaptic potentials).
3) Exocytosis of neurotransmitter.
4) Generation of action potentials at post synaptic neurons.

The correct sequence of the events above according to their appearance during synaptic transmission

A. 1, 3, 2, 4.
B. 2, 1, 3, 4.
C. 1, 2, 3, 4.

38. An input neuron to a diverging circuit causes the membrane potential of a target neuron to change from -65 millivolts to -55 millivolts. Which of the following best describes this change in membrane potential(in millivolts)?

A. Excitatory postsynaptic potential = +10
B. Excitatory postsynaptic potential = -10
C. Inhibitory postsynaptic potential = +10
D. Inhibitory postsynaptic potential = -10

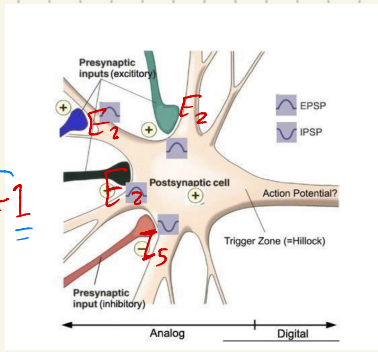
* Summation of EPSP and IPSP determine if there is an action Potential or not.

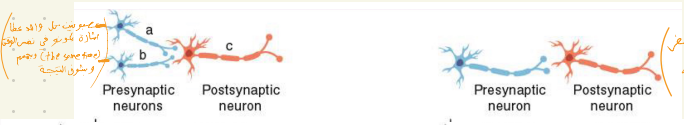
[if the summation reaches the threeshold]

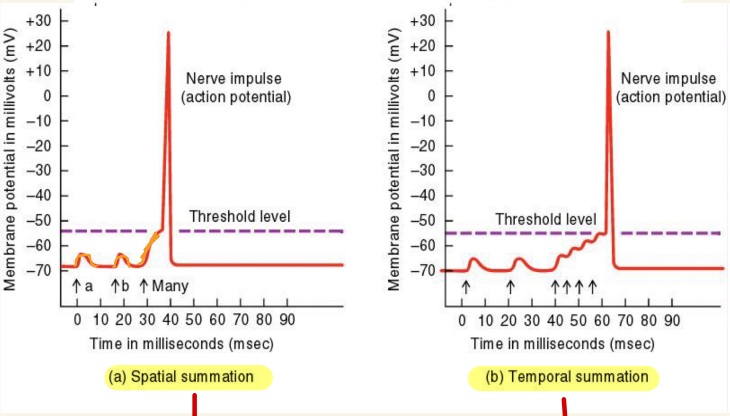
action Potential يكون threeshold اذا وصلي لـ

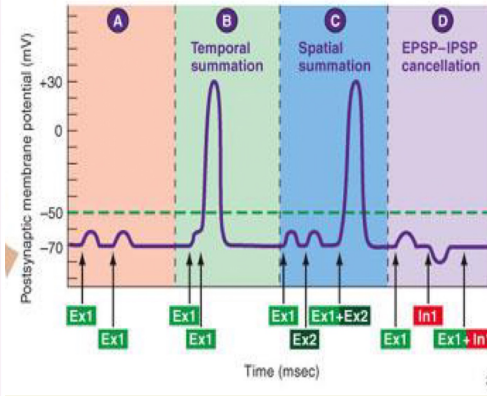
6 - 5 = 1

E - I





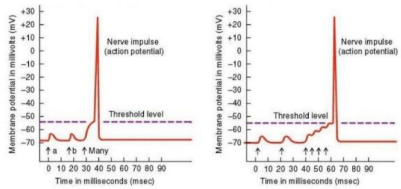




→ From 2 nueron AT the same time

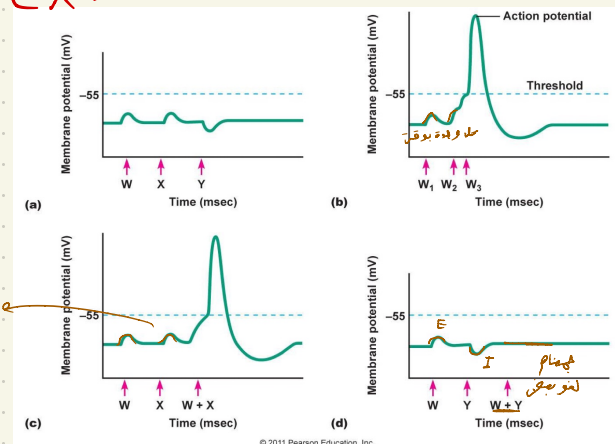
→ from 1 neuron not same time

34. The correct statement regarding this graph:

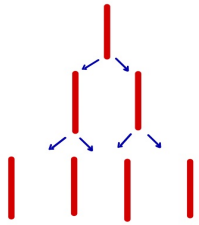


A. The left graph is caused by a spatial summation.
B. The right graph is caused by a spatial summation.
C. Cannot be determined.
D. This is not a spatial summation nor temporal summation.

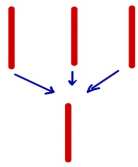
Ex :



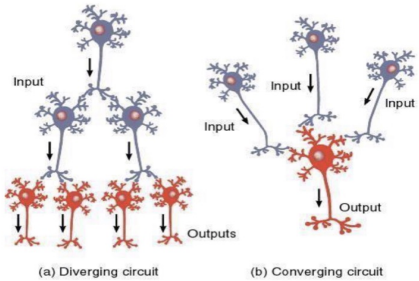
Organization



Divergence



Convergence



Record action Potential

- mono Phase
  - either + or − non both
    - ال + والـ − مايجو مع بعض

- biPhase
  - + first wave (dePolrizing)
  - − second wave (repolfizing)

compound action potential