

Student questions of the day.....

Q: Can't an initial depolarization travel down the length of the axon?

A: No, the ions entering the cell diffuse away from the depolarization site, which then needs to be regenerated.

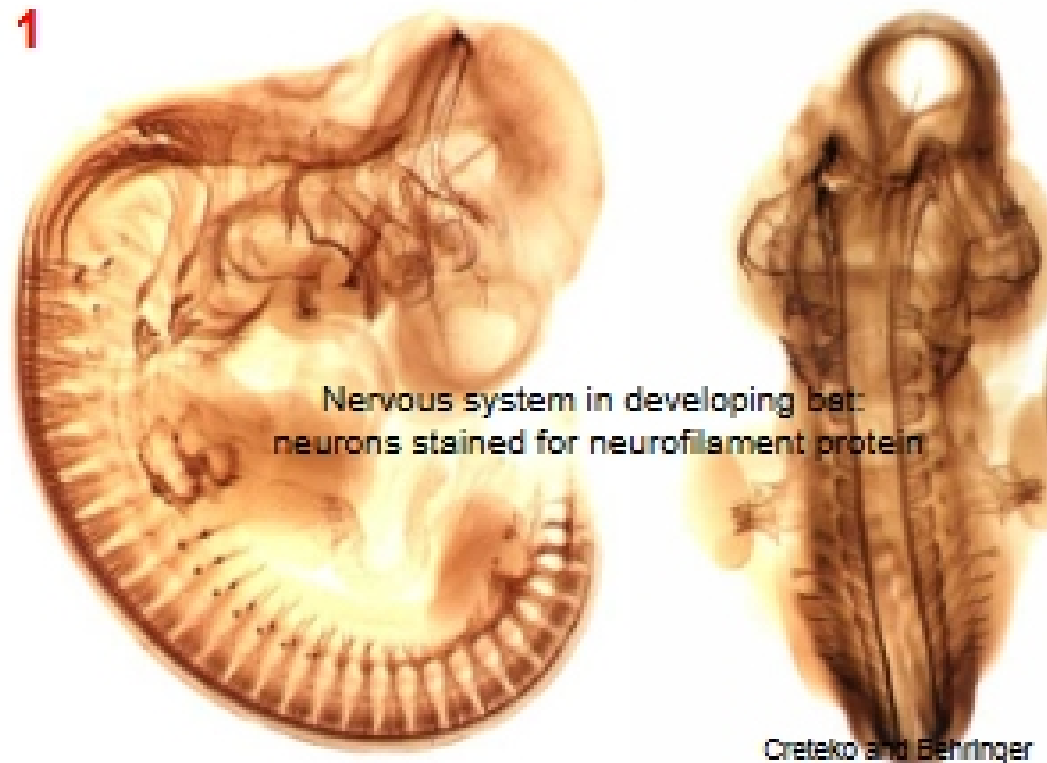
Q: How does reaching threshold potential lead to massive opening of voltage-gated Na⁺ channels?

A: At threshold potential, there is a conformational change in the channels, so they open fully.

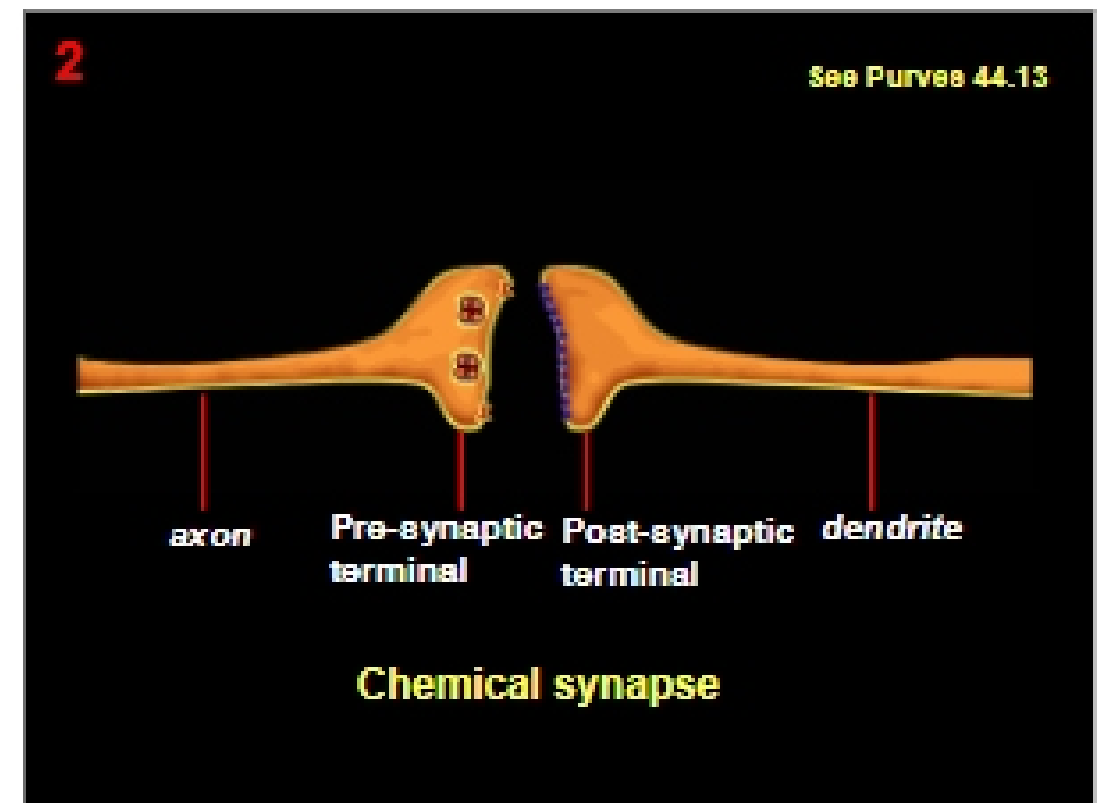
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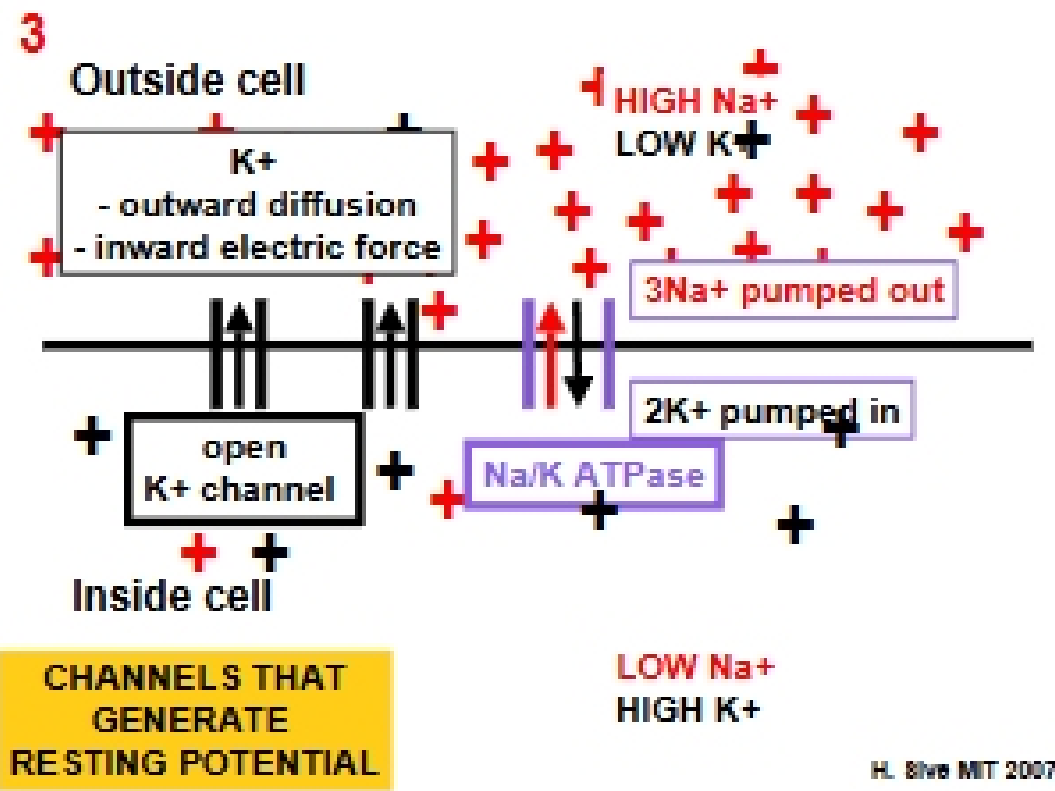
Systems I
Nervous system 2

1

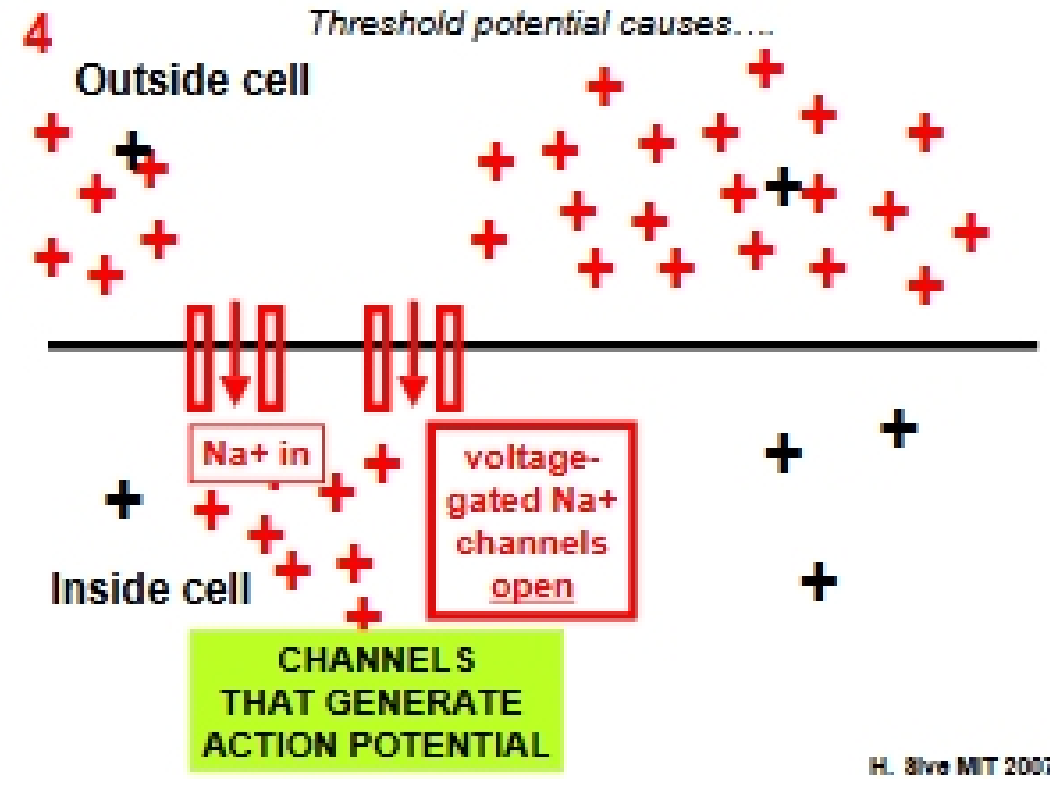


2

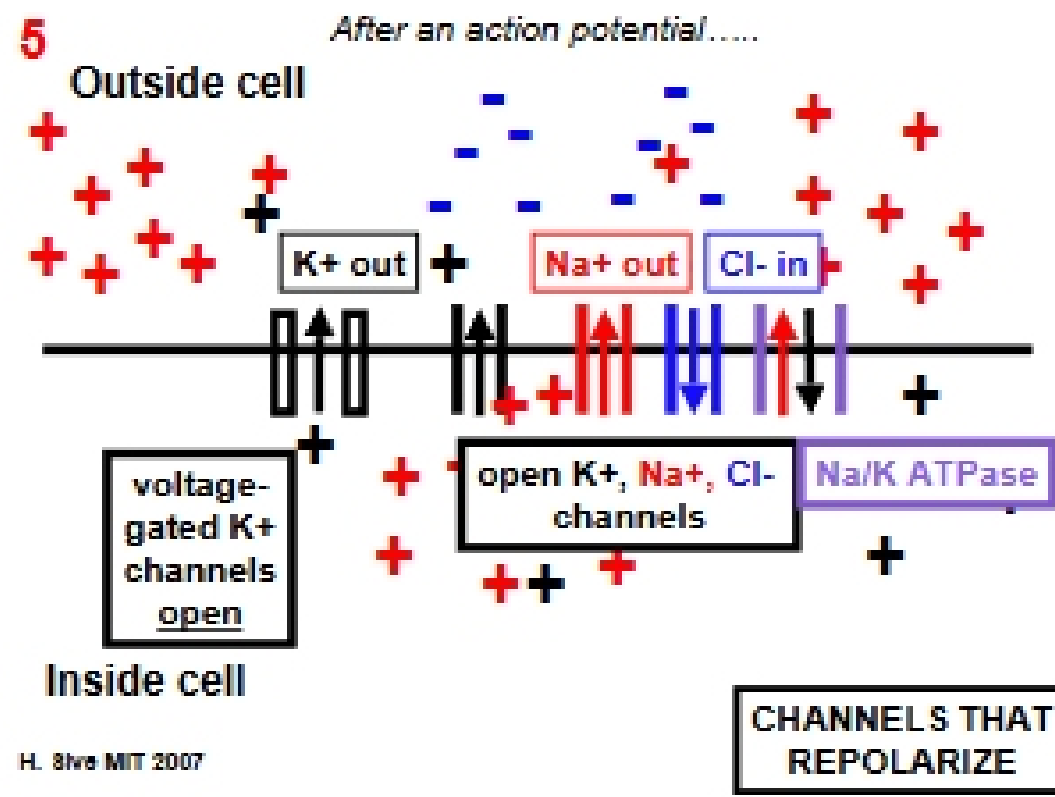




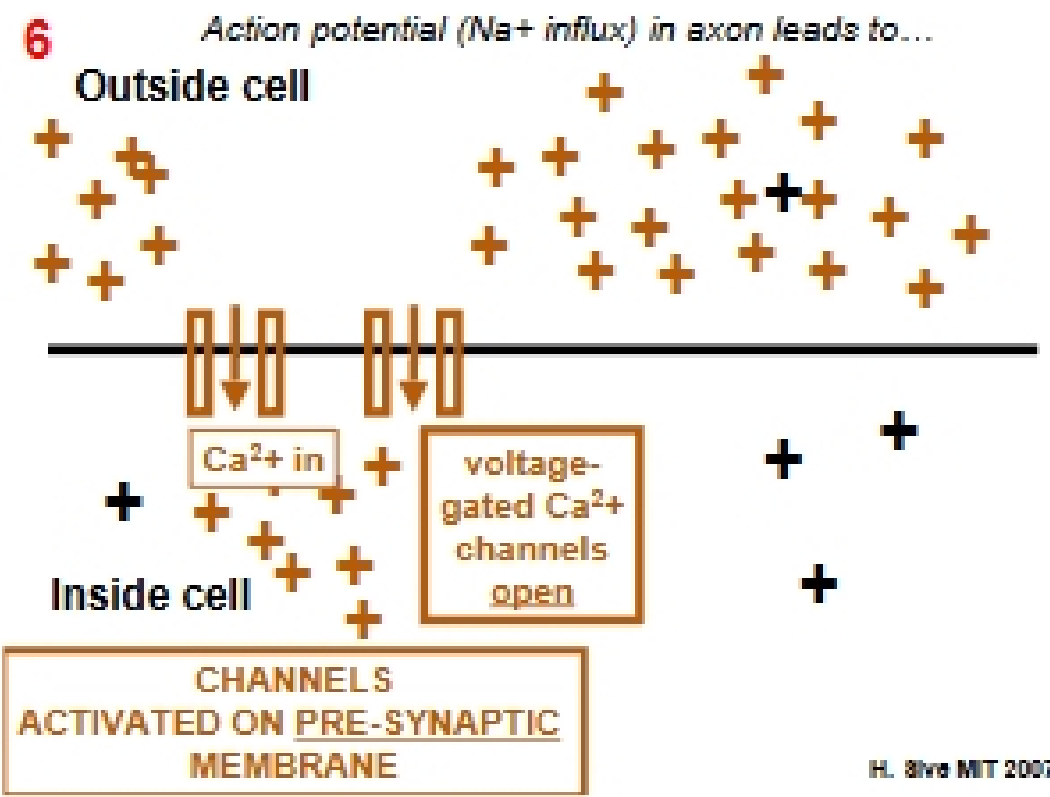
H. Silver MIT 2007



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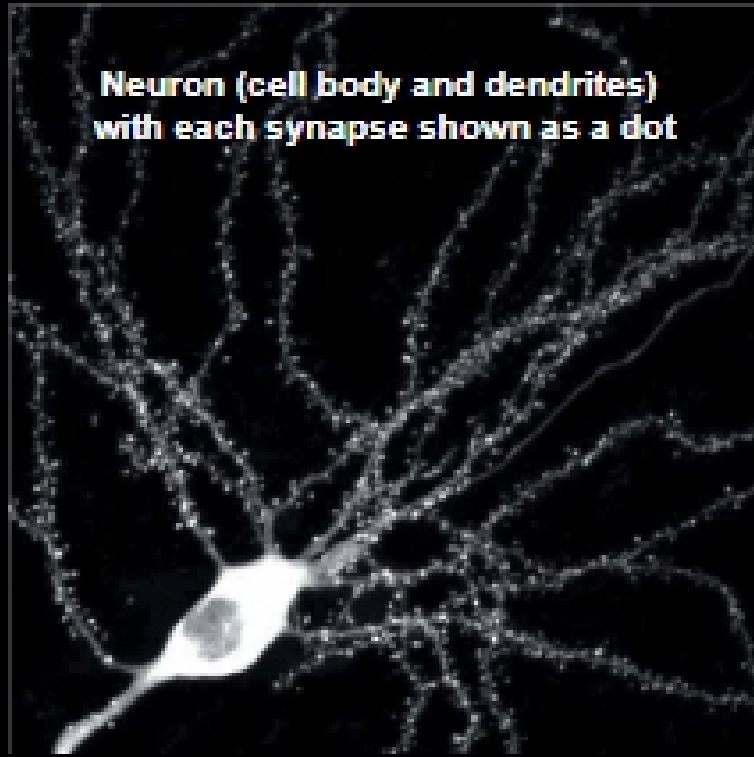
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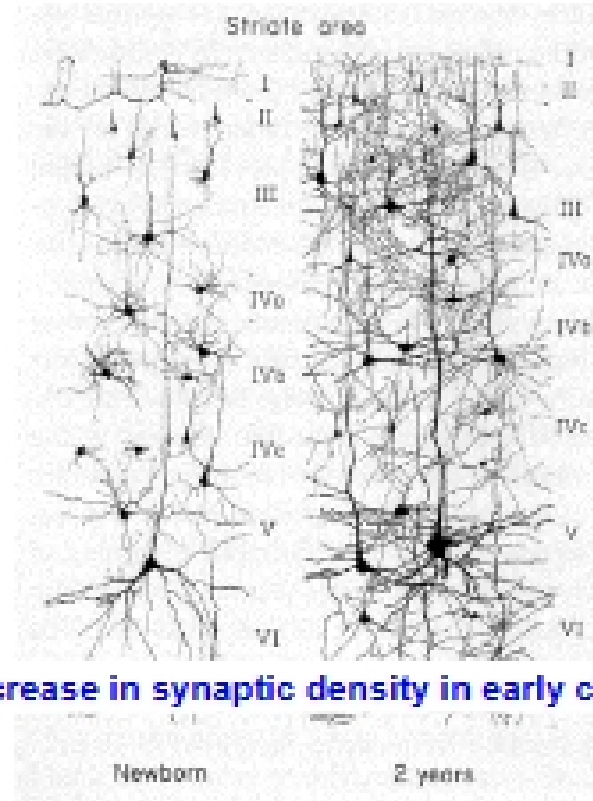
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Neuron (cell body and dendrites)
with each synapse shown as a dot

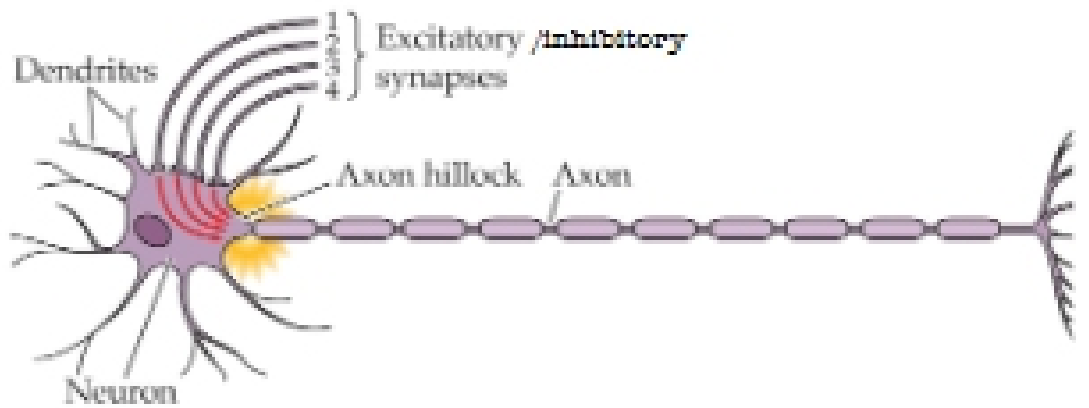


8



Increase in synaptic density in early childhood

Excitatory vs inhibitory synapses



Purves 44.15: post-synaptic membrane sums input
over time and space >> action potential